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A PRELIMINARY+ COMPILATION OF FISH LENGTH GROWTH PARAMETERS

by

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+This compilation contains a part of the data gathered for use in my dissertation, presently in preparation, and in which the quality of the data presented here will be assessed.

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Part I

1.1. Zusammenfassung

Die Längenwachstumsparameter von 515 verschiedenen Fischarten, verteilt in 1 501 verschiedenen Beständen werden vorgestellt. Diese Parameter sind L_∞ und K (sowie t_o in zahlreichen Fällen) der von Bertalanffy Wachstumsfunktion. Die Parameterwerte wurden mit Hilfe verschiedener Methoden in 966 Fällen aus "Literaturrohdaten" wie Längen-Alter Wertepaare und verwandte Daten neu berechnet, der Rest stammt aus früheren, ähnlichen Zusammenstellungen und von der Primärliteratur. Die Methoden, die für die Berechnung der Parameter eingesetzt wurden, werden kurz charakterisiert. Sie werden in einer späteren Veröffentlichung diskutiert werden.

Die Zusammenstellung umfaßt vor allem Seefische aus temperierten Gebieten, aber es wurde darauf geachtet, so viele tropische Seefische einzubeziehen, wie nur möglich. Nur 12 % der aufgeführten Arten sind rein limnisch.

Die Qualität der aufgeführten Werte ist ziemlich schwankend, und sie sollten möglichst im Zusammenhang mit den Originalwerten betrachtet werden, sowie mit Daten aus verwandten Beständen.

Eine Bibliographie mit mehr als 650 Referenzen, die Fragen des Fischwachstums behandeln, schließt diese Zusammenstellung ab.

1.2. Abstract

The length growth parameters of 515 different species of fish, distributed in 1 501 different stocks are presented. The parameters are L_∞ and K (as well as t_0 in many cases) of the von Bertalanffy growth function. They have been determined by various methods from "raw" size-at-age and related literature data in 966 cases, the rest originating from previous similar compilation and from the primary literature. The methods used for parameters estimation are briefly discussed, pending a detailed presentation elsewhere.

The compilation covers mainly temperate marine fishes, but care was taken to include as many tropical marine fishes as possible. Only 12 % of the species listed are purely limnic.

The parameter values listed are of varying quality and should be used preferably in the light of the original growth data and of data from related stocks.

A bibliography of more than 650 papers with data pertaining to fish growth is given.

1.3.

Previous compilations of fish growth parameters, especially those of Beverton & Holt (1959), Holt (1959, 1960), Beverton (1963), Taylor (1958) and Ursin (1967) have provided a great deal of insight into some of the mechanisms of growth in fishes.

In January 1977, I began a compilation of data on fish growth with the aim of identifying a general pattern to which the growth of all fish would conform and which could be used to predict the growth parameters of little-known fish stocks.

Such a general pattern does indeed exist and it will be exposed in my dissertation, presently in preparation.

The growth parameters calculated and/or used for the identification of this mechanism, however, do in themselves represent a fair amount of work and could be quite valuable to fishery biologists, especially those doing field work in areas where library and other facilities are not optimal.

1.4. Scope of the compilation

Table I should provide an idea of the scope of the present compilation, as compared with previous compilations. Table II relates the number of taxa included here to the number of recent fish taxa. It will be noticed that, while 24 % of all families and 10 % of all recent genera are included, the bibliography covers only 2.4 % of all existing species. It should be realized, however, that literally all commercially relevant species are included here: it is those fish populations supporting relevant fisheries which get investigated first, in all countries.

Thus any good scanning of the literature will result in a very good coverage of those species which are commercially

Table I: Summary of data included in previous compilations of fish growth parameters, as compaired with present compilation. ("Units" are pairs of value for L_∞ & K, "sexed units" are units relating to a given sex.)

No.	Group(s) of fish investigated	No of Genera	No. of Spp.	No. of Units	No of sexed Units	Authon(s)
1	misc. marine & freshwater	44	58	88	32	Beverton & Holt 1959
2	Scombridae	2	4	14	0	Holt 1959
3	Sardines	3	10	31	6	Holt 1960
4	Clupeidae & Engraulidae	7	13	51	0	Beverton 1963
5	Sciaenidae	11	13	13	0	Rao 1966
6	Engraulidae	3	7	75	0	Bayliff 1957
7	Cod, Gadus morhua	1	1	11	0	Taylor 1958
8	misc. marine & freshwater	63	81	81	13	Ursin 1967+
9	Trout, Salmo trutta	1	1	11	0	Gelhaar 1972
10	misc. marine, India	13	18	18	0	Banerji & Krishnan 1973
11	Cod, sprat and herring, Baltic	3	3	31	0	Thurow 1974
12	misc. marine & freshwater	300	515	1501	332	Pauly 1978

+gives estimates of asymptotic weight

important. Fig. 1 shows the overall geographic distribution of the stocks whose growth parameters are included here.

The distribution pattern that is apparent in Fig. 1 requires little comment. In the case of the marine fishes, Fig. 1 is a quite truthful indicator of the general lack of knowledge on the growth of tropical stocks. And I believe that the situation would have been similar had I focused on fresh water stocks. On the other hand, the total number of stocks included here could have been doubled in a relatively short period of time, by simply recording more data on stocks from the Northern Atlantic, where practically all commercially relevant stocks have been repeatedly investigated.

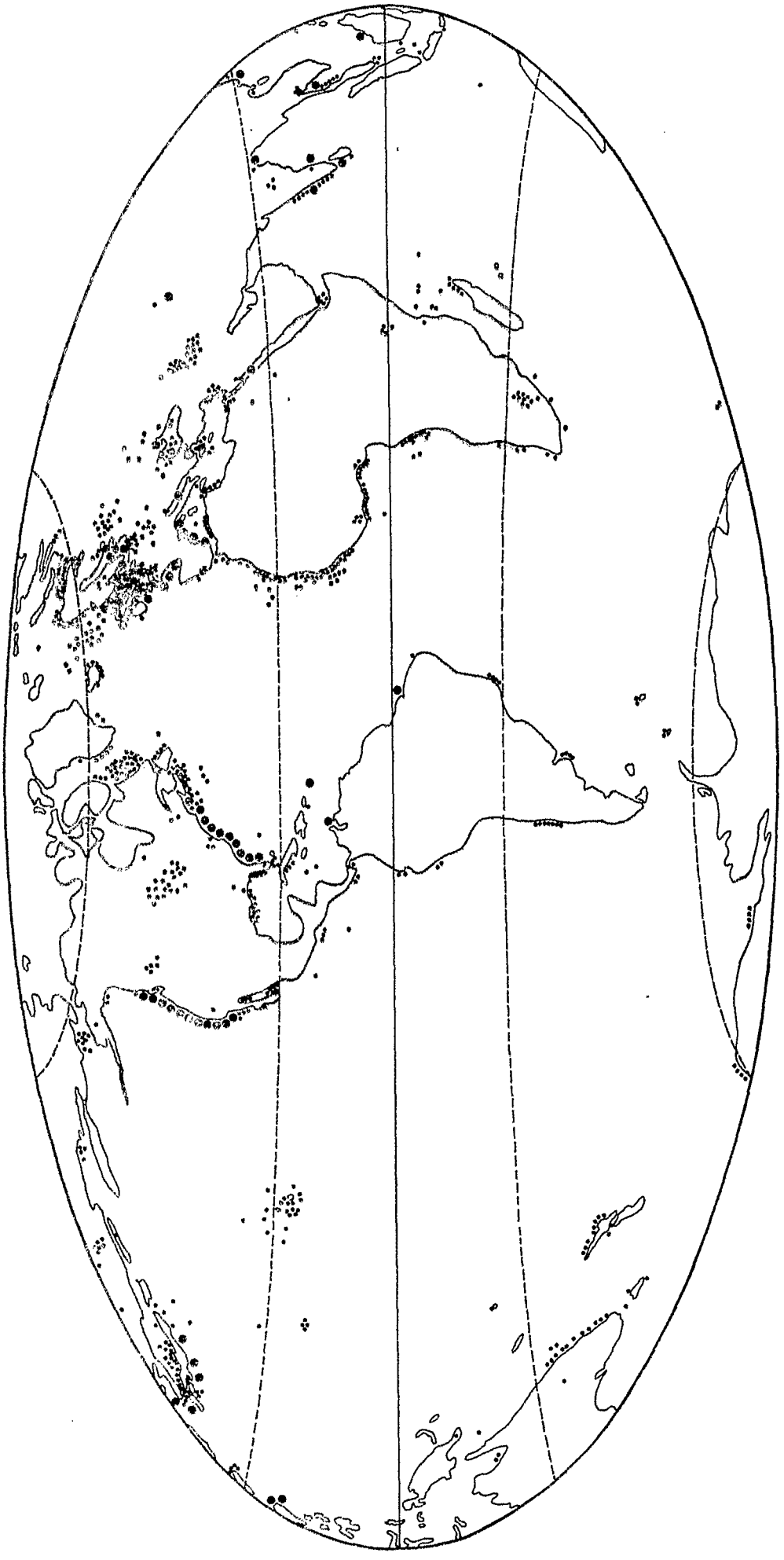


Fig. 1 Geographical distribution of units.
1 small dot = 1 unit, 1 large dot = 10 units.

Table II: Relationship of the numbers of taxa listed in this compilation with numbers of recent fish taxa.

Recent taxa		listed	extant	listed in % of ext.	Source of estimates
Families	lower fishes	14	34	41,2	Berg 1958
	Teleosteans	93	417	22,3	Greenwood et al. 1966
	total	107	447	23,9	
Genera	lower fishes	36	160	22,5	after Jordan, 1963 +
	Teleosteans	264	2 840	9.3	" " "
	total	300	3 000	10.0	
Species	lower fishes	50	650	7.7	after Cohen, 1970
	Teleosteans	465	21 000	2.2	" " "
	total	515	21 650	2,4	

+discounting as probable synonyms 50 % of his generic names and rounding off the resulting figures.

1.5. Source of data

a) A first source of data for this compilation were obviously the previous compilations listed in Table I. The data originating from this source generally have the code number "00" under the "method" heading. However, in most cases, the name(s) of the author(s) of the original data is (are) given under the "source" (of data) heading, this in order to enable users of this compilation to properly identify the stock in question.

b) A second source of data were review papers and books in which "raw" growth data, mainly length-at-age data had been compiled for descriptive or comparative purposes. Such sources were for example the papers by D'Ancona (1937) or Bougis (1952) and especially

Nikolsky's "Special Ichthyology" (1957). In the case of this type of source it is, as in case a) the original author who was quoted - even if he was not consulted in the original - rather than the compiler (with the exception of the soviet authors cited by Nikolsky and whose papers are generally not accessible here). Again, the aim was to enable the user to track down the original growth data.
This feature seems very important as it appeared very early in the course of this work that many sets of growth data cited in different papers went back to one same author and/or fish stock.

c) The third and most important source of growth data, however, was the primary literature, which was scanned quite thoroughly - at least for certain taxa and/or regions (see Fig. 1).
In those cases where the authors had calculated growth parameters themselves, this is indicated by a "0" under the "method" heading. In those cases where the parameters had not been calculated - that is in the majority of cases - this was done by using one of the methods listed in Table III, and the code number given correspond to the method used. In many cases, it was necessary to even reinterpret growth data, i.e. where authors had fitted their length-at-age data by straight lines (see for example Hureau 1970, Hureau & Ozouf 1977).

Thus, we summarize: All data with "0" and "00" under the "method" heading are parameters taken from the literature, all other ones (64.4 %) are original values, determined by means of the method whose code number is given.

Table III

Source or method used for the determination of the growth parameters presented in this compilation.

	Code Nr.	Nr. of units
1) Growth parameter estimated by author given as reference	0	346
2) Growth parameter estimated by author different from the one cited (i.e. originating from one of the previous compilations in Table I)	00	190
3) "Von Bertalanffy Plot"	1	23
4) "Ford-Walford Plot"	2	158
5) "Gulland & Holt Plot"	3	12
6) Gulland & Holt Plot, with set value for asymptotic size	31	13
7) Non-Linear-Regression	4	604
8) Non Linear Regression, with set value for asymptotic size	41	104
9) "Ageing"length frequency data	5	42
10) Ageing length frequency data, with set value for asymptotic size	51	9
		1 501

1.6. Methods used for the determination of growth parameters

1.6.1. Preliminary remarks:

The work on this compilation gave ample opportunity to critically assess the various methods used in the determination of growth parameters. Some of them could be expanded and/or made more flexible. Also a new technique for the analysis of size-frequency samples was devised which allows for better reproducibility of results.

All of these methods, critiques and new techniques will be presented in a next issue of the "Berichte des Instituts für Meereskunde", together with programmes for their quick computation.

It seems therefore superfluous to do here more than listing and briefly outlining the characters of these methods.
The Von Bertalanffy Growth Formula (VBGF) in the notation of Beverton & Holt (1959) has for length growth the form

$$Lt = L_{\infty}\,(1-e^{-K(t-t_o)})$$

The VBGF has been widely used in fisheries science, although it has been demonstrated that some of the assumptions made by von Bertalanffy (1934) do not apply (see for example Ursin 1967, Taylor 1962).

The VBGF, on the other hand, always produces an excellent fit to that part of a growth curve which corresponds to the exploited phase of fish stocks.

For this reason, and for the sake of comparability with previously published data, I have found it preferable not to use the four-parameters, generalized version of the VBGF, although it produces an even better fit and allows for a physiological interpretation of the parameters L_{∞} & K (Richard 1959, Taylor 1962, Ursin 1967, Pauly, diss. in prep.)

The parameters of the VBGF may be defined as follow:

1) The asymptotic length, or L_{∞} is about equal to the mean length the fish of a given stock would reach if they were to grow to a very old age. This definition differs from that of Ricker (1958) in that I insist that L_{∞} should be a biologically "possible" length, not a mere mathematical entity. As will be shown elsewhere, this definition is of greater heuristic value than that of Ricker (1958) when the growth parameters of different fish stocks are to be compared.

In small and middle-sized fishes, however, the values of L_∞ are only slightly higher than the maximum size actually recorded (L_{max}). This feature was noted by Holt (1960), Beverton (1963) and especially Taylor (1958). Latter author suggested that, as a rule

$$L_{max} \approx L_\infty \times 0.95$$

Table IV: Relative contribution of the various methods used for this compilation.

Code No of method	published growth parameters 0	00	original growth parameters 1	2	3	31	4	41	5	51
No of units	346	190	23	159	12	13	604	103	42	9
% of orig. values	--	--	2.4	16.5	1.2	1.4	62.5	10.7	4.4	0.9
% of all values	35.6 (Σ= 535)		64.4 (Σ= 966)							

This property of L_{max} has been used in this compilation to obtain preliminary estimates of asymptotic length in certain stocks. Such values I suggest to code "$L_{(\infty)}$" in order to prevent confusion with calculated values of L_∞.
Values of $L_{(\infty)}$ must always be used, obviously, with those methods requiring independent estimates of asymptotic size (that is methods 1, 31, 41, and 51). Most of the values of L_{max} used here come from the author who also produced the growth data.

2) The constant K has the dimension 1/time, and is here always expressed as 1/year. An exhaustive discussion of its character and properties will be given elsewhere.

3) The parameter t_o is "the age the fish would have had at length zero had they always grown in the manner described by the equation" (Ricker, 1958).
Note that this definition implies that t_o cannot be interpreted biologically unless it is demonstrated that the fishes do always grow according to the equation.

This applies to the length at age zero which should not be interpreted as length at hatching or birth.

1.6.2. Methods 1 to 5

1.6.2.1 Method 1, called here the "von Bertalanffy Plot" has been proposed by von Bertalanffy (1934, p. 627) for the estimation of K and by Beverton & Holt (1957, p. 283, fig. 16.4) and Ricker (1958) for the estimation of K and t_o on the base of a preliminary estimation of $L_{(\infty)}$. The method has the advantage that the length-at-age samples can be weighed according to their size, and that data at unequal time interval can be used.

1.6.2.2 Method 2 is the well-known "Ford-Walford Plot" (Ford, 1933, Walford, 1946) which can be used for data at equal time interval only. For statistical reasons to be discussed in the planned manual of methods, a "functional" rather than a "predictive" regression has been fitted to the plot of $L_t + 1$ against L_t data (see Ricker (1973), for a definition of the regression types). An exhaustive discussion of the FW Plot and its variants will be given elsewhere.

1.6.2.3 Method 3 is the "Gulland & Holt Plot" proposed for the treatment of data at unequal time interval (Gulland and Holt, 1959). The method has the code number 3. In certain cases a set value of $L_{(\infty)}$ used in conjunction with the "Gulland and Holt Plot" has proven necessary and helpful. This method, called here "Simplified Gulland & Holt Plot" has the code number 31.

1.6.2.4 Method 4 is the direct estimation of the growth parameters by means of a non-linear regression. Methods and programmes for the direct estimations of growth parameters have been introduced to fishery biology by Tomlinson & Abramson (1961), Fabens (1965) and Allen (1966). The programme used here was kindly written (in Algol) for the author by Dr. G. Gaschütz and was run on the Digital PDP 10 of the computer center of Kiel University. This programme, coded 4, estimates growth parameters from length or weight-at-age data, both at equal or unequal time intervals and the various data can be weighted by sample size. This latter feature allows for the use of a value of $L_{(\infty)}$ or $W_{(\infty)}$ which is input as a size at a very large age (say 500 years) and given a very high weight in term of sample size. This latter method is coded 41.
The programme and instructions for its use will be presented in the planned manual of methods.

1.6.2.5 "Ageing" length frequencies

The two techniques generally used for the determination of values of L_∞ and K from length frequency data are:

1) the Petersen method
2) the "modal class progression analysis".

With the first method, assumptions are to be made on the time interval which separates various peaks assumed to represent certain age groups.
With the second method, assumptions are to be made as to which of the peaks can be interconnected that belong to two or several samples separated by (a) known time interval(s).

Thus, for example, questions to ask would be for the samples in figure 2A:

method 1) - which time interval is represented by the length difference between the two peaks of the May sample?

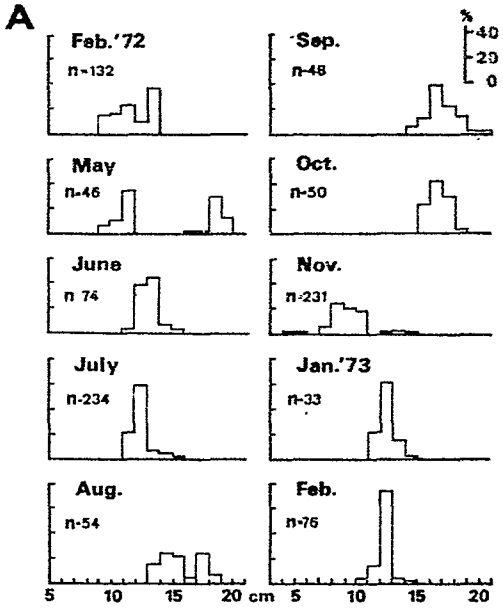
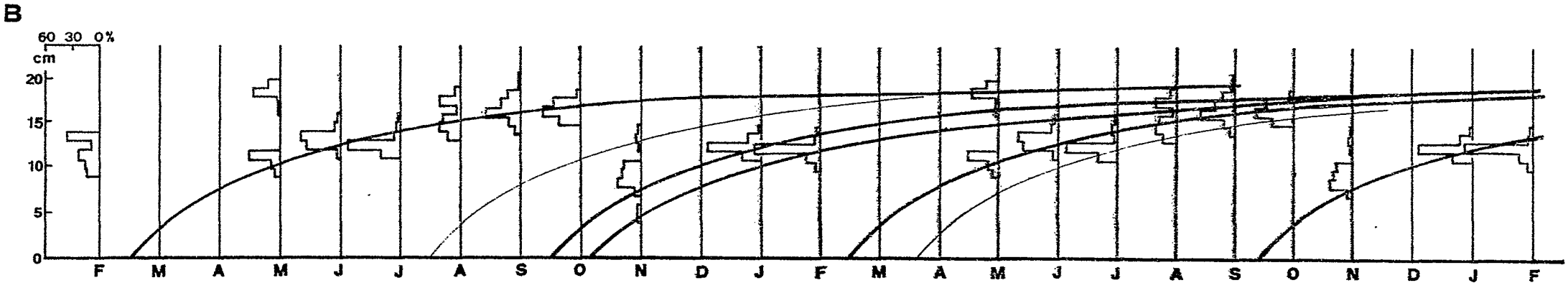


Fig. 2 A. Length frequency data on Sardinella sirm as presented by Burhanuddin et al. (1974)(copy of their Fig.2 p.20)
B. Same data as in Fig. 2A, replotted according to the integrated method.

Note special features:

1) The intervals on the time axis between the various samples are proportional to the time elapsed between the various sampling dates (c.f. Fig. 2A).
2) The original data are plotted twice along the time axis ("doubling up"). This allows for longer growth curves to be drawn. Note also that the two February samples coincide well.
3) All growth curves are drawn with a curved ruler and have approximately the same shape, varying only as to their origin.
4) The scale of the ordinate (length) starts at zero, thus allowing for the approximate birth date to be traced back (c.f. Fig. 2A).
5) Each growth curve interconnects several peaks; the more peaks a curve interconnects, the more likely it is to depict the actual growth of the population.
6) The length-at-age can be read off the curves at equal time intervals (say months), and these data plotted according to Ford-Walford (method 2). The various curves may yield slightly different estimates of L_∞ and K. In such case, geometric means should be taken.



method 2) - which of the three peaks of the November sample may be connected with the single January peak?

In most cases, the two questions of our example cannot be answered separately. Indeed, it appears that the two techniques may be combined into a new integrated method for "ageing" length frequency, where the question to ask may be formulated as follow:

- which combination of values of L_∞ and K produces a growth curve which "explains" - that is, interconnects - most of the peaks of a series of sequentially arranged length frequency samples?

The actual technique to use for the determination of the appropriate values of L_∞ and K is described in details on page 15, Fig. 2B.
An interesting feature of the integrated method is that it can be readily programmed. A computer programme for the processing of length and weight frequencies, including data where the growth rate oscillates seasonally is presently in preparation.

1.7. Presentation of data

1.7.1. General

The growth parameters are presented in "units", one unit containing at least a species name, a value of L_∞ (or $L_{(\infty)}$) and of K, with a reference and a code number under the "source", resp. the "method" heading. In addition, a sampling location, more or less precise, is given, and/or additional comments under the "note" heading. A frequent note is a value of M (exponential coefficient of natural mortality), which in most cases originate from the papers by Beverton and Holt (1959) and Beverton (1963), but may also come from papers not cited but referring to the stock in question.

1.7.2. Taxonomic questions pertaining to data presentation

Quite often, the fishes whose growth parameters were used or determined belong to taxa whose valid names have not yet been agreed upon. I have assumed that the law of priority does not affect fish growth and stuck to the following rules :

1) Subspecific taxa were not considered and their names dropped from the specific names. Hence, for example, Notothenia rossi marmorata (fam. Notothenidae) is listed here as Notothenia rossi.

2) No serious attempts were made to check the validity of the specific and generic names used by the various authors. The taxa I put in synonymy are those I happened to know about; as a whole I have probably been more a "lumper" than a "splitter".

3) The genera recognized were ordered into families by means of Jordan's "Classification of Fishes" (1963) but the only families considered valid are those of Berg (1958) for the lower fishes and of Greenwood et al. (1966) for the Teleosteans, with the exception of the Thunnidae and Scombridae which were kept separate. Thus, for example, the data of Eisele (1943) on Coregonus wartmanni, to be found here under Coregonus lavaretus, are listed in the salmonid family, since the coregonid family, listed in Jordan (1963) is considered a subfamily of the Salmonidae by Greenwood et al. (1966).

4) The families, finally are listed alphabetically (see index p. 23). The only exceptions pertain to data by Holden (1974) on the order Selachoidei which are all grouped on one page (118), because of their controversial nature. (Holden (1974) interpreted t_o biologically, as the duration of gestation period, and the length-at- age zero as birth length).

1.7.3. Conversion to uniform length measurements

A considerable amount of problems have been caused by the need to use, throughout this compilation the same type of length measurements. Most authors do state the type of length they measured (standard, total, fork, eye-to-fork etc.). Some however, do not. Still there was a need to convert the data to uniform length measurements. The convention used here is the total length, except for the large scombroids such as tuna and billfishes, where fork length was used. Obviously, caudal filaments and the like have not been considered. Conversions from other lengths were made by using conversion factors given by the authors themselves, or from figures depicting the fishes in question. I have no doubts that, regrettably, these conversion problems are one of the main source for the errors which may occur in this compilation.

A few of the length growth parameters were derived from estimates of weight growth parameters, expecially in the case of the clupeid Brevoortia tyrannus. Such conversions were done on the assumption that growth is isometric. A discussion of the value of this assumption will be given elsewhere.

1.8. Reliability of data

The growth parameters listed here, although in many cases calculated with the most sophisticated method presently available (Non-Linear Regression) should in any case be used with great circumspection.

The value of L_∞ (and consequently of K) derived from a given set of length-at age data are strongly affected by biased sampling, by sex specific growth, by seasonal growth oscillation (especially in short-lived species), to mention only a few of the problems occuring.

The methods used provide for parameter estimates of varying quality. In term of reliability and goodness of fit they may be ordered as follow: 4, 2, 3, 5 and 41, 1, 51, 31, the second group being as a whole less reliable than the first.

The data of this compilation, it should be kept in mind do not represent a list of confirmed growth parameters, and are at the present stage nothing but raw data to be used in future comparative studies of fish growth. The parameters values presented here are for general orientation, and need to be checked in the light of the original growth data, and of data from related stocks everytime they appear controversial.

1.9. Acknowledgement

My sincere thanks go to my supervisor Prof. Dr. G. Hempel for his support and guidance during the course of this work. I would also like to thank my friend Götz Gaschütz for providing me with the powerful, yet versatile tool that his programme for non-linear regression represents and which he offered me before I even knew that such things existed.
My gratitude also goes to Sandra Wade who turned my handwritten bibliography and notes into a readable whole, and to Mrs. Rockel for critically typing the manuscript. I would like to thank Uli Damm for discussing with me various aspects of, and contributing to this compilation, and, finally Prof. Dr. Daget of the Musée National d'Histoire Naturelle, Paris, for permission to work in the library of that Institution.

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Part II

2.1. Alphabetic Index to families

Family	Genera	Species	Units	Sexed Units	Page
1. ACANTHURIDAE	1	4	4	0	27
2. ACIPENSERIDAE	3	9	10	0	27
3. AGONIDAE	1	1	1	0	27
4. AMMODYTIDAE	1	3	12	0	28
5. ANARHICHIDAE	1	3	8	4	28
6. ANOPLOMATIDAE	1	1	2	2	29
7. APOGONIDAE	1	2	2	0	29
8. ARGENTINIDAE	1	3	10	2	29
9. ARRIPIDAE	1	1	1	0	29
10. ATHERINIDAE	1	1	2	2	30
11. BALISTIDAE	2	2	2	0	30
12. BATRACHOIDAE	2	2	3	2	30
13. BERYCIDAE	1	1	1	0	30
14. BLENNIDAE	2	3	3	0	30
15. BOTHIDAE	4	4	11	7	31
16. BRANCHIOSTEGIDAE	1	3	11	2	32
17. CALLIONYMIDAE	1	2	4	4	32
18. CALLORHYNCHIDAE	1	1	1	0	32
19. CARANGIDAE	4	10	16	0	33
20. CARCHARCHINIDAE	3	3	4	2	33
21. CENTROPOMIDAE	1	2	3	0	34
22. CHAENICHTHYIDAE	2	2	2	0	34
23. CHAETODONTIDAE	1	1	1	0	34
24. CHANIDAE	1	1	1	0	34
25. CHARACINIDAE	1	1	1	0	34
26. CHEILODACTYLIDAE	1	1	1	0	34
27. CHIMAERIDAE	1	1	2	2	35
28. CHIROCENTRIDAE	1	1	1	0	35
29. CICHLIDAE	1	10 (incl. 2 hybrids)	39	10	36

Alphabetic Index (cont'd)

Alphabetic Index (contd)

Alphabetic Index (contd)

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ACANTHURIDAE							
Acanthurus bahianus	Virgin Islands, Caribbean	23.5	0.314	–		Randall 1962	31
" chirurgus	" " "	33.2	0.254	–		" "	31
" coeruleus	" " "	31.6	0.247	–		" "	31
" triostegus	Oahu, Hawaii	21.7	0.350	–		" 1961	31
Family ACIPENSERIDAE							
Acipenser dauricus	–	275.	0.073	–		d'Ancona 1937	4
" güldenstaedti	Azov Sea	253.	0.045	-3.5		in: Nikolsky 1957	4
" medirostris	–	190.	0.087	–		d'Ancona 1937	4
" ruthenus	–	57.8	0.130	–		d'Ancona 1937	4
" nudiventris	Southern Caspian & Ural River	205.	0.119	–		in: Nikolsky 1957	4
" "	Aral Lake	205.	0.053	-4.35		"	4
Huso huso	Azov Sea	249.	0.097	–		"	4
Pseudoscaphirhynchus kaufmanni	Amu-Darja River	65.4	0.164	-0.95	16^o spawn.	"	4
Acipenser stellatus	–	201.	0.06	–		v. Bertalanffy 1951	0
" fulvescens	Nottaway River, Canada	156.	0.033	-5.59		Magnin 1965	4
Family AGONIDAE							
Agonus cataphractus	Seine Bight, Normandy Coast	15.	0.475	-0.15		Le Gall 1969	4

SPECIES NAME	SAMPLING LOCATION	L_{oo}	K	t_o	NOTES	SOURCE	METHOD
Family AMMODYTIDAE							
Ammodytes dubius	Nova Scotia Bank, Canada	41.7	0.228	–		Scott 1968	4
" marinus	Haddock Bank, Southern North Sea	21.8	0.89	–	M = 1.24	Macer 1966	00
" "	Isle of Man, Irish Sea	12.2	0.98	–		Cameron 1958	4
" "	North East Scotland	20.	0.393	–		in: Reay 1970	41
" "	Murman Coast, USSR	24.9	0.163	–		Kirillov 1936	4
" "	Western Irish Sea	15.	0.334	–		Molloy 1967	41
" tobianus	Langstone Harbour, Gr. Britain	16.8	0.77	–	M = 1.29	Reay 1973	0
" "	Kiel Bight, Western Baltic	21.9	0.449	–	fall spawners	Kändler 1941	4
" "	Isle of Man, Irish Sea	22.2	0.633	–	spring "	Cameron 1958	4
" "	Isle of Man, Irish Sea	23.4	0.552	–	fall "	Cameron 1958	4
" "	Porthmouth, Southern England	16.1	0.720	–	spring "	Reay 1970	4
" "	Porthmouth, Southern England	19.7	0.704	–	fall "	Reay 1970	4
Family ANARHICHIDAE							
Anarhichas denticulatus	North Atlantic "1-2° C"	150.	0.098	–		Beese & Kändler 1969	0
" "	–	162.	0.081	-2.94		in: Nikolsky 1957	4
" lupus ♂	North Atlantic "2-4° C"	167.	0.044	–		Beese & Kändler 1969	0
" " ♀	North Atlantic "2-4° C"	158.	0.043	–		Beese & Kändler 1969	0
" "	–	104.	0.121	-2.69		in: Nikolsky 1957	4
" minor	North Atlantic "1° C"	181.	0.061	–		Beese & Kändler 1969	0
" " ♂	Bear Island, North Norway	140.	0.124	–		Östvedt 1964	4
" "	Bear Island, North Norway	153.	0.094	–		Östvedt 1964	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ANOPLOMATIDAE							
Anoploma fimbria ♂	Oregon, USA	78.	0.23	-1.58		Pruter 1954	4
" " ♀	Oregon, USA	96.	0.19	-1.54		Pruter 1954	4
Family APOGONIDAE							
Apogon cyanosoma	Eilat, Red Sea	9.4	2.904	-0.07		Gundermann & Popper 1975	4
" imberbis	Nice to Menton, France, 20 m	15.	0.90	–		Garnaud 1962	41
Family ARGENTINIDAE							
Argentina semifasciata	Japan	19.	1.2	–		Hanyu 1956	00
" silus	44°N 52°W	45.4	0.199	–		Keisler 1966	4
" "	57°N 8°E	50.7	0.120	–		" "	4
" "	63°N 24°W	52.5	0.121	–		" "	41
" "	65°N 30°W	55.6	0.143	–		" "	41
" " ♂	43°N 64°W	42.5	0.166	–		Soviet data in: Emery & McCracken 1966	4
" " ♀	43°N 64°W La Have Bank	39.3	0.179	–		Emery & McCracken 1966	4
" "	43°N 60°W La Have Bank	32.0	0.248	–		Polish data in: Emery & McCracken 1966	4
" "	43°N 62°W max cpue at 7.5° C	43.8	0.139	-1.74		Emery & McCracken 1966	4
" sphyraena	Mediterranean, off Sète, France	22.3	0.278	–		Lee 1963	4
Family ARRIPIDAE							
Arripis trutta	New South Wales, Australia	62.	0.3	-0.14		Nicolls 1973	0

SPECIES NAME	SAMPLING LOCATION	L_{oo}	K	t_o	NOTES	SOURCE	METHOD
Family ATHERINIDAE							
Menidia extensa ♂	Lake Waccamaw, North Carolina	9.6	1.36	–	spawning at 70° F	Davis & Londer 1969	41
" " ♀	Lake Waccamaw, North Carolina	10.4	1.04	–		Davis & Londer 1969	41
Family BALISTIDAE							
Rudarius ercodes	Tomioka Bay, Japan	6.0	1.20	–		Kikuchi 1966	4
Balistes vetula	Virgin Islands, Caribbean	60.	0.23	–		Randall 1962	31
Family BATRACHOIDAE							
Parichthys porosissimus	Port Aransas, Texas	13.0	1.752	–		Lane 1967	41
Opsanus tau ♂	Patuxent River (Chesapeake Bay)	38.1	0.106	–		Schwarz & Dutcher 1963	4
" " ♀	Patuxent River (Chesapeake Bay)	24.1	0.410	–		Schwarz & Dutcher 1963	4
Family BERYCIDAE							
Beryx splendens	Sagami Bay, Japan	40.8	0.457	–		Ikenouye & Masuzawa 1968	0
Family BLENNIDAE							
Acanthoclinus quadridactylus	Auckland Harbour, N. Zealand	21.5	0.231	-0.48		Jillett 1968	4
Blennius pavo	Castiglione, Algeria	15.	0.5	–		reference lost	4
" pholis	Southern England	17.	0.30	–		Qasim 1957	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family BOTHIDAE							
Scophthalmus maximus ♂	North Sea	49.2	0.37	-0.51		Jones 1974	0
" " ♀	North Sea	64.8	0.26	-0.05		Jones 1974	0
" "	North Sea (?)	106.	0.067	-		Kyle 1926	4
" " ♂	Southern North Sea	52.5	0.320	-0.10		Mengi 1963	4
" " ♀	Southern North Sea	70.	0.148	-1.79		Mengi 1963	4
Lepidorhombus megastoma ♂	North of Gulf of Biscay 200 m	59.4	0.130	-		Furnestin 1935	4
" " ♀	North of Gulf of Biscay 200 m	97.5	0.076	-		Furnestin 1935	4
" "	East of Shetlands, North Sea 200m	141.	0.047	-0.01		Furnestin 1935	4
" "	North Scottish Waters, N.Coast	61.1	0.13	-0.94		Robb 1963	5
Pseudorhombus cinnamoneus	-	38.4	0.311	-		Matsuura 1961	0
Citharichthys sordidus ♂	Californian waters	30.0	0.3	-	M<0.3	Arora 1951	00

$\log K = \phi' - 2 \log L_\infty$

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family BRANCHIOSTEGIDAE							
Branchiostegus japonicus	Pacific Coast, Central Japan	42.6	0.286	-0.72		Yasuda & Kosaka 1951	4
" " ♂	East China Sea 30°N 126°E 100 m	38.4	0.304	-0.38		Hayashi 1976	0
" " ♀	East China Sea , " " "	34.2	0.300	–		Hayashi 1976	0
" "	–	57.4	0.176	0.75		Yasuda & Kosaka 1951	4
" "	Japan Sea (Awajima)	41.6	0.358	–		" "	4
" "	East China Sea	43.5	0.331	-0.48		" "	41
" argentatus	East China Sea	39.4	0.312	-0.58		" "	4
" auratus	Northern Coast of Japan Sea	48.	0.164	–		" "	4
" "	Pacific Coast of Central Japan	42.6	0.286	-0.72		" "	4
" "	Japan Sea (Awajima)	39.3	0.382	–		" "	41
" "	East China Sea	43.5	0.331	-0.48		" "	41
		>40.0					
Family CALLIONYMIDAE							
Callionymus belcheri ♂	Moreton Bay, Australia 20 m	11.	0.477	–		Johnson 1972	4
" " ♀	Moreton Bay, Australia 20 m	10.5	0.411	–		Johnson 1972	4
" lyra ♂	Plymouth, England	25.	0.43	–		Hsiao-Wei, Chang 1951	00
" " ♀	Plymouth, England	17.5	0.55	–		Hsiao-Wei, Chang 1951	00
Family CALLORHYNCHIDAE							
Callorhynchus milii	New Zealand 44°S 173°E 50 m	150.	0.26	–		Gorman 1963	5

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CARANGIDAE							
Decapterus macrosoma	Palawan Waters, Philippines	24.4	0.949	–		Tiews et al. 1970	5
" punctatus	Al Ghardaqa, Red Sea	32.3	0.318	-0.56		Rafail 1972 a	0
" russelli	Corregidor Islands, Philippines	23.3	1.132	–		Tiews et al. 1970	5
Trachurus japonicus	Amakusa, Japan	64.7	0.138	–		Mukarami & Shindo 1949	4
" "	East China Sea 33°N 127°E	42.5	0.732	-0.07		Mitani & Ida 1964	0
" "	–	65.6	0.242	-0.65		Yamada & Kazihara 1955	4
" symmetricus	San Diego, California	88.7	0.207	–		Fitch 1956	41
" trachurus	Western South Africa 33°S 18°E	54.3	0.127	-0.31		Geldenhuys 1973	0
" "	North Sea , Coastal Waters	43.4	0.18	-0.48		Sarhage 1970	4
" "	Portuguese Coast	40.	0.158	–		Barraca 1954	41
" "	Black Sea	22.4	0.299	–		Nikolsky 1957	4
" murphyi	Valparaiso, Chile 33°S	75.7	0.62	–		Kaiser 1973	0
Seriola dorsalis	Southern California 33°N 118°W	148.	0.136	-1.9		Baxter et al. 1960	0
" quinqueradiata	Wakasa Bay, Japan	116.	0.327	-0.05		Mitani & Sato 1959	4
" "	Rensen, Korea	110.	0.556	-0.11	LT?	Honda 1950	4
Selaroides leptolepis	Inner Gulf of Thailand	20.	1.155	–		Morsuwan 1970	51
Family CARCHARHINIDAE							
Mustelus canis ♂	Buzzard Bay, 41°30'N 70°46'W	110.	0.07	-4.8		Moss 1972	0
" " ♀	Buzzard Bay "	150.	0.041	-5.4		Moss 1972	0
Prionace glauca	Southwestern England	423.	0.11	-1.04		Stevens 1975	0
Galeorhinus australis	Bass Strait (Australia-Tasmania)	168.	0.130	-1.24		Olsen 1954	4

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family CENTROPOMIDAE							
Lates calcarifer	culture ponds, Songkhla, Thailand	37.8	1.82	–		Wongsomnuk et al. 1971	3
" niloticus	Nozha Hydrodrome, Alexandria	180.	0.177	–		Hashem & Hussein 1973	1
" calcarifer	Daru, Papua New Guinea	113.	0.187	–		Reynolds & Moore 1973	2
Family CHAENICHTHYIDAE							
Pseudochaenichthys georgianus	South Georgia 20 m	54.4	0.316	–		Olsen 1955	4
Champsocephalus gunnari	" " 20 m	41.4	0.394	–		Olsen 1955	2
Family CHAETODONTIDAE							
Pomacanthus aureus	Virgin Islands, Caribbean	47.4	0.214	–	K too low?	Randall 1962	31
Family CHANIDAE							
Chanos chanos	culture pond, India	31.5	2.31	–		Tampi 1960	00
Family CHARACINIDAE							
Hydrocyon forskalii	inland waters, Sudan	55.4	0.452	–		Rafail et al. 1973	2
Family CHEILODACTYLIDAE							
Cheilodactylus macropterus	New Zealand	56.3	0.10	-4.3	M = 0.15 (but t_o too high and K too low)	Vooren 1972	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CHIMAERIDAE							
Hydrolagus collei ♂	Cape Blanco - Newport, Oregon USA	96	0.221	-		Johnson & Horton 1972	41
" " ♀	" " "	79	0.196	-		" "	41
Family CHIROCENTRIDAE							
Chirocentrus nudus	India 9°N 79°20'E	87.2	0.242	-		Luther 1973	41

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CICHLIDAE							
Tilapia esculenta	Lake Victoria, Kavirondo Gulf	32.0	0.50	–		Garrod 1959	0
" "	" , outside Kav.Gulf	33.5	0.31	–		"	0
" "	" , Mwanza Area	32.4	0.31	–		"	0
" "	" , Jinja Area	33.8	0.32	–		"	0
	the following data stem from aquaria experiments, food ad libitum				all: temp. 22,5° C		
Tilapia esculenta	oligochaete worms	12.5	2.22	–	Table I	Cridland 1960	2
" "	beef and mutton liver	10.5	2.03	–	" II	"	2
" "	beef muscle	9.5	1.02	–	" III	"	2
" "	Mormyrus stomach contents	25.1	0.427	–	" V	"	2
" "	Tilapia muscle	12.2	0.908	–	" VI	"	2
" "	Mormyrus muscle	9.0	1.89	–	" VII	"	2
" "	Tilapia stomach contents	30.8	0.255	–	" VIII	"	2
" "	prawns	16.3	0.794	–	" X	"	2
" "	Euglena	8.0	1.02	–	" XII	"	2
" "	maize meal	6.4	0.958	–	" XIV	"	2
" "	small aquarium, Bemax, prawns & worms	12.8	3.29	–	" XVII	"	2
" "	large aquar. Bemax, prawns & worms	10.1	3.80	–	" XVIII	"	2
" "	small aquarium, Bemax, prawns & worms	12.5	2.22	–	" XIX	"	2
" "	Bemax, prawns, worms & Daphnia	12.4	2.87	–	" XXI	"	2
Tilapia variabilis	Bemax, prawns, worms & Daphnia	8.0	4.26	–	" XXII	"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CICHLIDAE							
Tilapia mossambica ♂	Lake Sibaya, 27°25' S 32°40' E	27.5	0.350	-0.38		Bruton & Allanson 1974	4
" " ♀	" "	21.5	0.425	-0.54		"	4
" "	Njelele Dam 22°44' S 30°7' E	30.0	0.521	–		Le Roux 1961	2
" "	Fundudzi Lake 22°50' S 30°20' E	33.0	0.148	–		"	2
" "	Loskop Dam 25°25' S 29°21' E	47.0	0.212	–		"	2
" "	Sheya-Io-ngubu Dam 25°43' S 31°21' E	34.8	0.373	–		"	2
" "	Rust-der-Winter Dam 25°14' S 28°28' E	41.7	0.226	–		"	2
" "	Harteespoort Dam 25°44' S 27°50' E	34.2	0.363	–		"	2
" "	experimental ponds, Thailand	12.2	7.03	–		Chotiyarnwong 1971	2
T. mossambica ♀♀ x T. nilotica ♂♂	" "	15.4	8.14	–		"	2
T. mossambica ♂♂ x T. nilotica ♀♀	" "	11.8	7.54	–		"	2
Tilapia nilotica	" "	10.6	8.14	–		"	2
" " ♂	Lake Tiberias, Israel	35.7	0.501	–		Ben-Tuvia 1960	4
" " ♀	" "	33.3	0.538	–		"	4
T.nilotica ♀♀ x T.macrochir ♂♂	experimental ponds, Bonaké, Ivory coast		1.491	–		Lessent 1968	3
Tilapia nigra ♂	experim. ponds, Sagana, Kenya	27.5	0.203	–		van Someren & Whitehead 1960	2
" zillii	Lake Tiberias, Israel	26.3	0.234	–		Ben-Tuvia 1960	4
" melanotheron	Lagos lagoon, Nigeria	33.1	0.159	–		Fagade 1974	4
" galilaea ♂	Lake Tiberias, Israel	35.7	0.501	–		Ben-Tuvia 1960	4
" " ♀	" "	33.3	0.538	–		"	4

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Clupea harengus	East Anglia, YC 1932	28.2	0.378	-		Burd 1960	4
" "	" " 1933	28.4	0.361	-		"	4
" "	" " 1934	29.4	0.234	-		"	4
" "	" " 1935	29.3	0.264	-		"	4
" "	" " 1936	29.1	0.307	-		"	4
" "	" " 1943	29.5	0.290	-		"	4
" "	" " 1944	30.3	0.222	-		"	4
" "	" " 1945	30.2	0.267	-		"	4
" "	" " 1946	31.0	0.239	-		"	4
" "	" " 1947	29.9	0.375	-		"	4
" "	" " 1948	30.4	0.313	-		"	4
" "	" " 1949	31.0	0.296	-		"	4
" "	" " 1950	31.6	0.264	-		"	4
" "	Buchan Herring YC 1952	31.1	0.28	-2.87		Hubold 1975	0
" "	" " 1953	30.6	0.42	-0.28		"	0
" "	" " 1954	30.7	0.30	-1.84		"	0
" "	" " 1955	32.1	0.31	-2.24		"	0
" "	" " 1956	35.1	0.16	-4.87		"	0
" "	" " 1957	32.9	0.28	-1.60		"	0
" "	" " 1958	33.3	0.29	-1.60		"	0

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Clupea harengus	Buchan Herring YC 1959	32.9	0.32	-1.30		Hubold 1975	0
" "	" " YC 1960	32.7	0.42	-0.81		"	0
" "	" " YC 1961	32.7	0.48	-0.22		"	0
" "	" " YC 1962	31.5	0.43	-0.84		"	0
" "	Baltic, Gulf of Riga	17.	0.666	-		Nikolsky 1957	4
" "	Baltic, Gulf of Gdansk 1936-39	23.9	0.295	-1.67	fall spawners	Popiel 1958	0
" "	" " 1946-57	24.4	0.35	-2.3	" "	"	0
" "	" " 1936-37	24.7	0.273	-1.01	spring "	"	0
" "	" " 1946-57	24.5	0.244	-1.68	" "	"	0
" "	" Bornholm Deep 1939-42	22.1	0.493	-		"	2
" "	" " 1943-45	23.6	0.381	-		"	2
" "	" " 1952-57	26.0	0.434	-1.43		"	0
" "	" Kiel Bight	27.9	0.620	-	spring spawn.	Weber 1970	0
" "	" "	28.7	0.630	-	fall "	"	0
" "	"large White Sea herring"	25.3	0.381	-	spawn.t.5-15° C	Nikolsky 1957	4
" "	"lesser White Sea herring"	21.	0.296	-	" 0-6° C	"	41
" "	Murman Herring (72°N 35°W)	28.3	0.292	0.289		"	4
" "	"North Sea"	30.	0.38	-	M = 0.25	Beverton & Holt 1959	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Sardina pilchardus	Sète (French Mediterranean Coast)	19.9	0.360	-1.09		Lee 1961	4
" "	Morocco	21.6	0.49	-	M = 0.50	Belveze 1972	4
" "	Alicante (Altea), Spain	20.1	0.405	-1.86		Rodriguez-Roda & Larraneta 1955	4
" "	Alicante (Torrevic.), Spain	20.9	0.529	-1.11		" "	4
" "	Agean (Mytilini)	16.7	0.483	-1.31		Laskaridis 1948	4
" "	Agean (Oreos)	16.6	0.399	-1.64		Laskaridis 1948	4
" "	Upper Adriatic (off Venedice)	17.0	0.689	-1.02		Mozzi & Duo 1958	4
" "	Castellon, Spain	19.6	0.31	-		Larrañeta & Lopez 1958	4
" "	Formentera, Spain	22.5	0.33	-1.81		Andreu et al. 1950	4
" "	Gulf of Lion	16.4	0.557	-0.66		Fage 1920	4
" "	Castellon, Spain	16.6	0.565	-1.03		Andreu et al. 1950	4
" "	Spanish Medit. Coast	17.	0.60	-		Bougis 1952	00
" " ♂	Loire to Gironde Mouths, Biscay	20.	0.32	-		d'Ancona 1937	00
" " ♀	Loire to Gironde Mouths, Biscay	25.	0.25	-		d'Ancona 1937	00
" "	off Split, Yugloslavia	17.	0.40	-		Muzinič 1957	00
" "	Castellon, Spain	20.3	0.306	-1.54		Larrañeta 1965	0
" "	Barcelona, Spain	20.4	0.272	-2.21		Lopez 1963	4
" "	Bay of Biscay	19.	0.40	-		Bougis 1952	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Sardinella albella	Gulf of Manaar, India	13.0	1.654	–		Bennett 1961	5
" "	Gulf of Manaar, India	13.3	1.298	–		Benett 1961	5
" "	Gulf of Manaar (?)	17.	1.1	–		Nair 1960	00
" "	Mandapam, India	13.3	1.44	–		Sekaran 1955	0
" anchovia	Venezuela, Gulf of Coriaco 64°W	24.2	0.725	–		Heald & Griffiths 1967	0
" "	Venezuela	24.0	0.7	–		Simpson 1971	0
" eba	Senegal	35.	0.608	–		Postel 1955	4
" "	Congo	39.6	0.277	–		Rossignol 1955	4
" "	Congo	24.9	0.990	–		Ghéno & Le Guen 1968	0
" fimbriata	Karwar, India	18.4	1.316	–		Radhakrishnan 1964	4
" "	Philippines	14.	1.6	–		Ronquillo 1960	00
" gibbosa	Mandapam, India	17.1	1.08	–		Sekaran 1955	00
" longiceps	Bali Strait, Indonesia	23.8	0.505	–		Dwiponggo 1972	0
" "	Indian Waters	21.0	0.60	-1.12		Anthony Raja 1970	0
" "	India, West Coast	20.7	0.528	-1.33		Banerji 1973	0
" "	India	27.	0.4	–		Nair 1960	00
" "	Malabar Coast, India	20.7	0.50	–		Hornell & Naidu 1924	00
" sirm	Thousand Islands, Java Sea	24.3	0.586	–		Burhanuddin et al. 1974	5
" "	Al Ghardaqa, Red Sea	22.6	0.65	–		Rafail 1972a	41

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Sardinella aurita	Pointe Noire, Congo, January Brood	26.0	1.023	-0.09		Ghéno 1975	0
" "	Pointe Noire, Congo, May Brood	26.0	1.208	-0.03		Ghéno 1975	0
" "	West Africa 19°N 17°W	40.7	0.326	-		Pham-Thuoc & Szypula 1975	0
" "	Canary Islands	37.0	0.257	-0.82		Navarro 1932	4
" "	Israel Coast	31.1	0.250	-1.81		Ben-Tuvia 1956	4
" "	Senegal	51.9	0.170	-1.05		Postel 1955	4
" "	Balearic Islands	27.7	0.447	-1.41		Navarro 1932	4
" "	Pointe Noire, Congo	31.0	0.693	-		Rossignol 1955	4
" "	Rio de Janeiro, Brazil	24.5	0.423	-1.23		Richardson et al 1960	4
" "	Agean	29.0	0.50	-		Anamiades 1952	00
" " ♂	Balearic Islands	30.	0.35	-		d'Ancona 1937	00
" " ♀	Balearic Islands	35.	0.25	-		d'Ancona 1937	00
" "	Castiglione Bight, Algeria	25.	0.534	-		Dieuzeide & Roland 1957	1
Sardinops melanostica	Japan	27.0	0.65	-		Tokai Lab. 1960	0
" "	N.West Pacific (Japan,recent)	27.0	0.90	-		Nakai 1960	00
" "	N.West Pacific (Japan, early years)	29.0	0.50	-		Holt 1960	0
" ocellata	Walfis Bay, Namibia	36.0	0.358	-0.235		Matthew 1960	4
" "	Walfis Bay, Namibia 23° S 14° E	30.6	0.225	-		Newman 1970	0
" "	33° S 17° E, South Africa	29.5	0.45	-		Davies 1958	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Sardinops caerula	California	30.5	0.396	-0.59	M = 0.15	Phillips 1948	4
" " ♂	"	29.	0.60	–		"	00
" " ♀	"	31.	0.46	–		"	00
" "	San Francisco, Calif.	29.5	0.398	-2.10	M = 0.45	in: Marr 1960	4
" "	California	29.3	0.45	–	M = 0.4	Beverton 1963	0
" "	Mexico (Baja California ?)	26.	0.50	–		Granados 1958	0
" "	British Columbia, Year class 37	25.1	0.57	–		Felin 1954	00
" "	" " " 1938	29.1	0.55	–		"	00
" "	" " " 1940	29.3	0.52	–		"	00
" "	" " " 1941	30.0	0.52	–		"	00
" "	" " " 1942	30.2	0.53	–		"	4
" "	Monterey, California	30.0	0.35	–		in: Marr 1960	4
" "	San Pedro, Calif. YC 1937	26.0	0.54	–		Felin 1954	00
" "	" " 1938	26.1	0.52	–		"	00
" "	" " 1942	27.6	0.53	–		"	00
" "	" " 1941	26.9	0.56	–		"	00
" "	" " 1940	25.7	0.55	–		"	00
" "	" " 1939	26.8	0.59	–		"	00
" "	California	27.	0.70	–	M = 0.15	Silliman 1943	00

SPECIES NAME	SAMPLING LOCATION		L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE								
Brevoortia tyrannus	Chesapeake Bay Year Class	1954	24.3	0.639	–		Henry 1971	4
" "	" " "	1955	28.3	0.338	–		"	4
" "	" " "	1957	34.1	0.218	–		"	4
" "	" " "	1959	36.8	0.238	–		"	4
" "	" " "	1960	33.8	0.432	–		"	4
" "	" " "	1961	35.1	0.434	–		"	4
" "	" " "	1962	30.9	0.511	–		"	4
" "	" " "	1963	31.7	0.533	–		"	4
" "	North Carolina Fall Fishery YC	1952	41.8	0.218	–		"	4
" "	" "	1953	36.4	0.561	–		"	4
" "	" "	1954	36.8	0.576	–		"	4
" "	" "	1955	36.6	0.545	–		"	4
" "	" "	1956	36.9	0.442	–		"	4
" "	" "	1958	36.6	0.480	–		"	4
" "	" "	1961	38.8	0.409	–		"	4
" "	" "	1962	36.9	0.455	–		"	4
" "	" "	1963	40.2	0.307	–		"	4
" "	" "	1964	38.4	0.388	–		"	4
" "	" "	1965	37.5	0.441	–		"	4
" "	" "	1951	37.1	0.353	–		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Brevoortia tyrannus	South Atlantic YC 1957	25.0	0.490	–		Henry 1971	4
" "	" " 1959	22.7	0.463	–		"	4
" "	" " 1960	20.6	0.741	–		"	4
" "	" " 1962	22.7	0.463	–		"	4
" "	" " 1963	21.9	0.770	–		"	4
" "	" " 1964	20.9	1.091	–		"	4
" "	Middle " " 1951	35.1	0.37	–		"	4
" "	" " 1956	40.5	0.26	–		"	4
" "	" " 1958	44.0	0.209	–		"	4
" "	" " 1959	35.8	0.370	–		"	4
" "	" " 1963	42.8	0.282	–		"	4
" "	" " 1964	39.6	0.343	–		"	4
" "	North " " 1951	41.0	0.168	–		"	4
" "	" " 1952	45.8	0.119	–		"	4
" "	" " 1953	37.6	0.290	–		"	4
" "	" " 1954	37.7	0.242	–		"	4
" "	" " 1955	35.1	0.549	–		"	4
" "	" " 1956	39.9	0.231	–		"	4
" "	" " 1962	35.7	0.586	–		"	4
" "	" Catch 1955–1956	39.	0.542	–		Reintjes 1969	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Brevoortia tyrannus	Beaufort, North Carolina	47.6	0.289	-		Rush 1952	4
" " ♂	North Carolina 1959-1962	35.5	0.475	-		Reintjes 1969	0
" " ♀	North Carolina 1959-1962	36.9	0.478	-		Reintjes 1969	0
Sprattus sprattus	Norwegian Coast	16.	0.65	-		Sund 1911	00
" "	Western England	16.4	0.53	-	early spawners	Iles & Johnson	0
" "	Western England	14.0	0.63	-	late spawners	Iles & Johnson	0
" "	Kiel Bight	14.9	1.02	-0.04		Hohendorf 1966	0
" "	Black Sea, Soviet Coast	18.0	0.136	-2.5		Aslanova 1954	4
" "	Black Sea, Soviet Coast	11.9	0.31	-0.83		Berg et al. 1949	4
" "	Southern France	14.2	0.368	-2.30		Furnestin 1948	4
" "	"North Sea"	13.0	0.70	-	M < 1.2	Robertson 1938	4
" "	Northern Adriatic	14.4	0.452	-		Zavodnik 1969	4
" "	Gulf of Biscay 0-50 m	17.5	0.297	-		Porche 1976	2
Clupea pallasi	Southern Alaska 50°-60° N	32.	0.349	-		Rounsefell 1930	4
" "	-	35.6	0.558	-		Nikolsky 1957	4
" "	Canadian West Coast	23.	0.29	-	M = 0.56	Ricker 1958	00
Clupeonella delicatula	Azov Sea	10.9	0.246	-		Berg et al. 1949	2
" "	Caspian, Volga-Caspian Rayon	16.1	0.236	-		"	2
" "	Caspian, Dagestan Coast	11.0	1.134	-		"	2
Caspialosa saposhikovi	Caspian, Azerbaydzhan	28.8	0.353	-		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CLUPEIDAE							
Hilsa ilisha	Mandapam area, India	51.1	0.49	-		Sekaran 1955	00
" " ♂	Hoogly River, India	44.7	0.652	-		Pillay 1958	4
" " ♀	Hoogly River, India	46.1	1.030	-		Pillay 1958	4
Sardinops neopilchardus	Australia, New South Wales	22.4	0.467	-0.09		Blackburn 1949	4
" "	Australia, Victoria	20.5	0.22	-		Blackburn 1950	00
" "	New Zealand 41° S 173° E	21.9	0.201	-		Baker 1972	2
Anadontostoma chacunda	Godavary Estuary, India	20.8	0.869	-		Babu Rao 1965	5
Clupanodon pseudohispanicus	Venezuela, Gulf of Cariaco	28.5	0.864	-		Martin & Gonzales 1960	5
" "	Venezuela, Gulf of Cariaco	27.6	0.678	-		Martin & Gonzales 1960	5
Etrumeus microps	Amakusa, Japan	21.	1.379	-		Mokami & Shindo 1949	4
Dorosoma cepedianum	ponds, Indiana, USA	43.6	0.179	-		Miller 1960	4
Raconda russelina	Indian waters	24.7	0.40	-		Verghese 1961a	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CORYPHAENIDAE							
Coryphaena hippurus ♂	Florida Strait	167.	0.53	-	very tentative	Beardsley 1967	4
" " ♀	" "	135.	0.62	-	very tentative	"	41
Family COTTIDAE							
Cottus beldingii	Lake Tahoe, California	9.	0.316	-		Ebert & Summerfeldt 1969	4
Taurulus bubalis ♂	Kiel Bight, Baltic	18.4	0.207	-		Lamp 1965	4
" " ♀	" "	18.7	0.251	-		"	4
Cottus gobio ♂	Windermere, Gr. Britain	7.2	0.7	-	M = 1.1	Smyly 1957	00
" " ♀	" "	7.3	0.4	-	M = 0.9	"	00
Oligocottus maculosus	Port Renfrew, Brit. Columbia	10.2	0.208	-1.35		Chadwick 1976	4
Myoxocephalus scorpius ♂	Kiel Bight, Baltic	19.6	0.758	-		Lamp 1965	4
" " ♀	" "	32.3	0.358	-		"	4
" " ♀	Heligoland, North Sea	26.7	0.539	-0.572		Hass 1937	4
" octodecimspinosus	New England	30.	0.72	-		Morrow 1951	2
Family CYCLOPTERIDAE							
Liparis inquilinus	39°N, near Hudson Canyon 40 m	6.6	2.78	-		Able & Musik 1976	4
" pulchellus	Northern California, Humboldt Cty.	20.	0.3	-		Johnson 1970	41
Cyclopterus lumpus	Islandic Waters	55.	0.12	-0.12	very tentative	Saemundsson 1926	1

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CYPRINIDAE							
Abramis brama	Aral Lake, USSR	51.9	0.153	-		Nikolsky 1957	4
" "	" "	54.1	0.241	-		Berg et al 1949	2
" "	Pskov Reservoir, USSR	72.9	0.119	-		"	2
" "	Ural River Delta, USSR	52.4	0.429	-		in: Backiel & Zawisza 1968	2
" "	Rybinsk Reservoir, USSR	86.1	0.068	-		"	2
" "	Volgograd Reservoir, USSR	111.	0.077	-		"	2
" "	Lake Ladoga, USSR	90.	0.076	-		"	2
" "	Njemen River, USSR	109.	0.096	-		"	2
" "	Danube Delta	74.4	0.165	-		"	2
" "	Middle Course of Dnepr River	65.5	0.191	-		"	2
" "	Dnepr River Delta, USSR	73.	0.191	-		"	2
" "	Ilmen Lake, USSR	86.4	0.093	-		"	2
" "	Volga, near Kuybyshev	93.1	0.081	-		"	2
" "	Bodensee, FRG	84.2	0.110	-		"	2
" "	Müggelsee (Berlin)	61.8	0.065	-		"	2
" "	Lake Hjälmären, Sweden	77.2	0.058	-		"	2
" "	Lake Onkamo, Finland	105.	0.064	-		"	2
" "	Danube River, near Medvedovo	71.6	0.109	-		"	2
" "	Lake Znin Duzy, Poland	91.4	0.085	-		"	2
" "	North German Lakes	94.5	0.053	-		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CYPRINIDAE							
Abramis brama	Lake Havgardsjön, Sweden	68.6	0.131	–		in: Backiel & Zawisza 1968	2
" "	Caspian, brackish waters	54.6	0.257	–		"	2
" "	Hommanäs-Pellige, Finland, brackish	70.1	0.058	–		"	2
" "	Vistula Firth, Baltic, brackish	71.6	0.075	–		"	2
" "	Arkona, Baltic, brackish	74.5	0.091	–		"	2
" "	Azov Sea, brackish	57.7	0.287	–		"	2
" "	–		0.235	–	page 281	v. Bertalanffy 1951	0
Catla catla	River Yamuna, India	128.	0.28	-0.11		Natarajan & Jhingran 1963	0
Cirrhinus mrigla	River Godavary, India	140.	0.122	-0.46		Hanumantharo 1974	0
Labeo niloticus ♂	Nozha Hydrodrom, Alexandria	55.8	0.662	–		Hashem 1972	2
" " ♀	" "	69.2	0.400	–		"	2
Rutilus rutilus	Petschora, USSR	42.5	0.08	–	stationary form	Nikolsky 1957	2
" "	Ilmen Lake	26.2	0.180	–	stationary form	"	2
" "	Aral Lake	51.3	0.101	–	migratory form	"	2
" "	Don River (Taran)	35.5	0.173	–	migratory form	"	2
Tor tor	Narbadi River, India	109.	0.082			in: Jhingran 1975	2
Acanthobrama terrae-sanctae	Lake Tiberias, Israel	21.5	0.277	–		Steinitz 1959	1
Brachydanio rerio	Laboratory	5.2	3.97	–		Eaton & Farley 1974	4

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family CYPRINIDAE							
Parabramis pekinensis	Amur River	60.	0.096	–	All USSR	Nikolsky 1957	1
Erythroculter erythropterus	" "	80.	0.117	–		"	1
Hypophthalmichthys molitrix	" "	70.	0.242	–		"	2
Ctenopharigedon idella	" "	167.	0.049	–		"	2
Mylopharyngodon piceus	" "	151.	0.085	–		"	2
Barbus brachycephalus	Syr-Darja River, at Tschardara	25.6	0.682	–		"	2
" "	" " , at Arys	73.6	0.122	–		"	2
" "	" " , at Kasalinsk	143.	0.080	–		"	2
" "	" " , at Kostam	110.	0.118	–		"	2
Varicorhinus capoeta	Murgab River, "Taschkepu"	61.1	0.092	–		"	2
" "	" " , "Sultanbent"	67.9	0.087	–		"	2
" "	Amur Darja River	44.9	0.170	–		"	2
Carassius auratus	Amur River	28.9	0.284	–		"	2
Carassius carassius	"culture ponds"	22.8	0.358	–		"	2
" "	Petschora River	29.8	0.093	–		"	2
Tinca tinca	Lower Wolga River	29.4	0.710	–		"	2
Cyprinus carpio	Aral Lake	74.8	0.157	–		"	2
" "	Asow Sea	57.3	0.335	–		"	2
" "	Ili River	32.0	0.286	–		"	2
" "	Southern Caspian	65.1	0.396	–		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family CYPRINIDONTIDAE							
Lebistes reticulatus ♀	Laboratory	5.0	1.74	-0.12	fish no 1	Ursin 1967	4
" " ♂	"	2.4	6.90	-0.07	" 2	"	4
" " unsexed	"	3.0	5.11	-0.06	" 3	"	4
" " ♀	"	5.0	2.12	-0.11	" 4	"	4
" " ♂	"	2.3	6.87	-0.07	" 5	"	4
" " ♂	"	6.1	1.10	-0.14	" 6	"	4
" " ♀	"	4.4	1.98	-0.12	" 7	"	4
" " ♂	"	2.6	6.74	-0.06	" 8	"	4
" " ♀	"	4.9	1.77	-0.10	" 9	"	4
" " ♀	"	5.0	1.56	-0.13	" 10	"	4
" " ♂	"	2.2	5.46	-0.08	" 11	"	4
" " ♀	"	4.2	2.3	-0.10	" 12	"	4
" " ♂	"	2.7	12.3	-		v. Bertalanffy 1951	0
" " ♀	"	4.4	4.44	-		"	0
Gambusia affinis ♂	Portugal	3.6	1.20	-	M<1.6	Da Franca 1953	00
" " ♀	Portugal	6.2	0.8	-	M<0.8	"	00
Lebistes reticulatus ♂	Aquarium 25 °C	1.5	9.12	-		Svärdson 1943	2
" " ♀	Aquarium 25 °C	3.5	3.23	-		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ELOPIDAE							
Elops saurus	Cuba, inshore waters	47.	0.24	-0.48		Carles 1967	4
Family EMBIOTOCIDAE							
Amphigonopterus aurora	California, tide pools	15.6	0.363	-0.89		Hubbs 1921	4
Amphistichus argenteus ♂	California 33.5° N 10-20 m	42.	0.184	-		Carlisle et al. 1960	4
" " ♀	" "	53.	0.147	-		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ENGRAULIDAE							
Engraulis japonicus	Japan	15.	1.6	–		Beverton 1963	0
" "	Sagami Bay, Japan	18.7	0.824	-0.17	spring spawn.	Kondo 1974	4
" "	" " "	20.6	0.586	-0.27	fall "	"	4
" "	Wakasa Bay, Japan	18.2	1.76	–		Wanatabe 1958	00
" "	Northern Kyushu	13.2	4.59	–		"	00
" "	Suo Nada, Japan	28.1	0.60	-0.20		"	00
" "	Sea of Japan	18.8	1.48	–		"	00
" "	Hyuga Nada, Japan	19.8	1.04	-0.17	spring spawn.	Asami & Hanaoka 1957	00
" "	" "	22.6	1.05	–	fall "	"	00
" "	Japan, Pacific Coast	17.8	1.70	–	spring "	Hayashi & Kondo 1957	00
" "	Hyuga Nada, Japan	23.7	0.98	-0.12		Yokota & Asami 1956	00
" "	" "	20.6	0.94	-0.17		Yokota & Furukawa 1952	00
" "	Harima Nada, Japan	14.4	2.02	–		Wanatabe 1958	00
" "	Ise Bay, Japan	10.0	3.24	–		"	00
" "	Japan, Pacific Coast	18.3	1.01	–	fall spawn.	Hayashi & Kondo 1957	00
Engraulis anchoita	Mar del Plata, Argentina	24.1	0.24	-2.2		Fuster de Plaza, no date	00
" "	" "	22.3	0.30	-1.2		"	00
" ringens	Peru $5^{o}50'$ – $37^{o}04'$ S, 10-20 m	15.6	1.38	–		Sanchez 1966	4
" "	Chile 20^{o} S 75^{o} W	16.9	1.6	-0.02		Simpson & Buzeta 1967	0
" "	Peru 14 – 17^{o} S	15.0	1.7	–	M≈ 1.5	Boerema et al. 1965	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ENGRAULIDAE							
Engraulis encrasicholus	Mediterranean, Algero-Maroccan Border	20.	0.396	–		Arrignon 1966	1
" "	Black Sea, Western	15.	1.26	-0.23		Majarova & Chugunova 1954	00
" "	Black Sea, Soviet Waters	13.9	1.73	–		Berg et al. 1949	00
" "	Black Sea, Eastern	14.2	0.81	-0.54		Majarova & Chugunova 1954	00
" "	Black Sea, Eastern	14.1	1.01	-0.28		Svetovidov 1964	00
" "	Azov Sea	11.7	1.16	-0.17		Berg et al. 1949	00
" "	Bay of Naples	17.6	1.28	–		Fage 1920	00
" "	Channel & Zuidersee	21.5	0.88	–		Hoek 1912	00
" "	Black Sea, Bulgaria	16.6	0.581	-0.92		Stoyanov 1961	4
" "	Greek Waters	16.5	1.39	-0.02		Vidalis 1949	00
" "	Upper Adriatic	15.3	2.44	–		Padoan 1963	00
" "	Gulf of Lion , France	20.0	0.42	-1.15		Lee & Juge 1965	00
" "	Azov Sea	9.4	1.21	-0.37		Svetovidov 1964	00
" "	Gulf of Biscay, France	23.2	0.21	-2.52		Furnestin 1943	00
" "	North Sea	18.6	1.21	-0.01		Meek 1916	00
" "	Azov Sea	10.8	7.66	–		Nikolsky 1957	00
Cetengraulis edentulus ♂	Venezuela 10.64° N 64° W	14.5	2.52	-0.34	spawning	Simpson & Griffiths 1973	0
" " ♀	Venezuela, off Taguapire	16.9	1.72	-0.40	Jan.-March	"	0
" " ♂	" "	14.0	2.72	-0.43	spawning	"	0
" " ♀	" , 10.64° N 64° W	16.9	1.86	-0.38	July-Sept.	"	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ENGRAULIDAE							
Cetengraulis mysticetus	Central East, Pacific	17.5	1.70	–		Beverton 1963	0
" "	Almejas Bay, Gulf of California	19.9	1.23	–		Bayliff 1969	0
" "	Guaymas Bay, "	17.0	2.58	–		Barett & Howard 1961	00
" "	Ahome Point, "	17.5	2.42	–		"	00
" "	Colombia	17.2	2.09	–		Bayliff 1967	0
" "	Gulf of Fonseca, Honduras, 1952	18.5	2.92	–		Barett & Howard 1961	00
" "	" , 1951, 1954, 1955	20.5	0.90	–		"	00
" "	Montijo Bay, Panama (Pac.)	19.1	2.42	–		Bayliff 1963	0
" "	Gulf of Panama 1951–1960	17.9	2.36	–		Bayliff 1966	0
" "	" 1961–1963	20.4	1.31	–		"	0
" "	Gulf of Guayaquil 3° S 80° W	17.4	1.34	–		Barett & Howard 1961	00
Stolephorus bucaneeri	Corregidor Islands, Philippines	11.6	1.226	–		Tiews et al. 1970	5
" heterolobus	Corregidor Islands "	10.3	1.286	–		"	5
" indicus	Singapore Strait	21.8	0.712	–0.13		Tham Ah Kow 1967	0
" insularis	"	11.9	2.08	–0.08		"	0
" indicus	Corregidor Islands, Philippines	17.2	1.085	–		Tiews et al. 1970	5
" pseudoheterolobus	Singapore Strait	10.3	2.08	–0.04		Tham Ah Kow 1967	0
" purpureus	Kaneohe Bay, Hawaii	11.4	1.737	–0.04		Struhsaker & Uchiyama 1976	41
" ,"Species A"	Corregidor Islands, Philippines	10.2	1.236	–		Tiews et al. 1970	51

SPECIES NAME	SAMPLING LOCATION	L_{oo}	K	t_o	NOTES	SOURCE	METHOD
Family ENGRAULIDAE							
Engraulis mordax	San Diego, California	16.6	0.69	-1.8	1955-56	Miller & Wolf 1958	00
" "	San Diego, California	18.2	0.48	-0.20	1956-57	" "	00
" "	Monterey, California	23.1	0.2	-4.3	1946-51	Clark & Phillips 1952	00
" "	Southern California	17.6	0.349	-2.43	1967	Messersmith 1969	4
" "	San Francisco	20.1	0.32	-3.1	1952-53	Miller et al. 1955	00
" "	Los Angeles, California	17.2	0.83	-2.1	1956-57	Miller & Wolf 1958	00
" "	Los Angeles, California	18.7	0.41	-3.6	1955-56	"	00
" "	" "	18.3	0.48	-2.6	1954-55	"	00
" "	" "	21.1	0.21	-4.4	1953-54	Miller et al. 1955	00
" "	" "	18.4	0.45	-2.7	1952-53	"	00
" "	Santa Barbara, "	18.6	0.44	-2.9	1954-55	Miller & Wolf 1958	00
" "	" "	20.0	0.26	-4.2	1953-54	Miller et al. 1955	00
" "	Monterey, California	21.9	0.19	-5.3	1955-56	Miller & Wolf 1958	00
" "	" "	19.8	0.20	-6.4	1954-55	"	00
" "	" "	27.0	0.10	-6.3	1953-54	Miller et al. 1955	00
" "	" "	28.5	0.20	-8.1	1952-53	"	00
" "	Oceanside, "	24.1	0.17	-4.5	1956-57	Miller & Wolf 1958	00
" "	" "	31.0	0.09	-5.4	1955-56	"	00
" "	San Clemente, "	19.1	0.40	-2.6	1956-57	"	00
" "	Newport, "	19.3	0.34	-3.1	1956-57	"	00

SPECIES NAME	SAMPLING LOCATION	L_{∞}	K	t_o	NOTES	SOURCE	METHOD
Family ENGRAULIDAE							
Engraulis mordax	Newport, California	16.5	0.61	-0.5	1955-56	Miller & Wolf 1958	00
" "	San Pedro, "	19.0	0.56	-1.4	1956-57	"	00
" "	" "	16.4	0.95	-1.4	1955-56	"	00
" "	Santa Monica, California	18.9	0.47	-2.1	1956-57	"	00
" "	Malibu, "	18.7	0.58	-1.5	1956-57	"	00
" "	Santa Barbara, "	20.5	0.33	-2.6	1956-57	"	00
Anchoa naso	Manta, Ecuador	8.6	1.78	-		Bayliff 1967	0
" "	" "	8.5	1.82	-		Joseph 1963	0
Coila borneesis	-	18.5	0.70	-		Verghese 1971	00
Setipinna taty	Lower Sunderbans, India	20.5	0.332	-1.17		D.K. De & Datta 1974	41
Thrissocles mystax	Malabar Coast, India	23.6	0.76	-		Venkatamaran 1956	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ESOCIDAE							
Esox lucius ♂	Windermere, England 4 m	75.	0.238	-0.18		in: Johnson 1966	0
" " ♀	Windermere, England 4 m	100.	0.264	–		"	0
" "	Wisconsin, USA	93.3	0.310	–	p. 233	Nikolsky 1957	2
" "	Aral Lake, USSR	80.6	0.204	–	"	"	2
" " ♂	Peipus Lake, USSR	64.4	0.332	–	"	"	2
" " ♀	Peipus Lake, USSR	97.5	0.208	–	"	"	2
" " ♂	Chany Lake, USSR	106.	0.123	–	"	"	2
" " ♀	" "	141.	0.097	–	"	"	2
" masquinongy	Wisconsin, USA	143.	0.150	–	"	"	2
" richerti	Tumen River, Sachalin Isl.	153.	0.089	–	"	"	2
" "	Bolon Lake, Amur, USSR	77.4	0.218	–	"	"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Gadus morhua	North Sea	132.	0.20	–	M < 0.20	Graham 1934	00
" "	Northern Norway	154.	0.069	–		Jensen & Hansen 1931	00
" "	Baltic, Bornholm Deep	120.	0.125	-0.33		Kosior 1976	0
" "	Southern North Sea 54° N 3° E	111.	0.333	–		Daan 1974	0
" "	Baltic, Bornholm Deep	99.5	0.2	–	M = 0.44	Kändler 1944	00
" "	Baltic, Bornholm Deep	106.	0.177	–		Tiews 1971	00
" "	South Western Iceland	102.	0.234	-0.35		Jonsson 1965	4
" "	Baltic, off Gdansk	112.	0.154	–	M = 0.31	Kändler 1944	4
" "	Baltic, Gdansk Deep	108.	0.153	–		Kosior 1976	0
" " ♂	Calais to Boulogne, France	123.	0.232	–		Lefranc 1970	4
" " ♀	Calais to Boulogne, France	122.	0.247	–		Lefranc 1970	4
" "	Deep of Gdansk, Baltic	72.8	0.209	–		Rutkowicz 1957	4
" "	Baltic, Bornholm	116.	0.095	–		Stanek 1962	4
" "	Labrador	73.3	0.154	–	(200 m)	May 1959	4
" "	Barents Sea	129.	0.126	–		Trout 1954	4
" "	Grand Bank, Newfoundland	176.	0.070	–		Ancellin 1954	4
" "	South West Greenland	92.3	0.218	–		Hansen 1949	4
" "	North West Greenland	106.	0.164	–		Hansen 1949	4
" "	Iceland	99.9	0.209	-0.47		Jonnson 1959	4
" "	Southern North Sea	126.	0.219	–		Lefranc 1966	4

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Gadus morhua	North Eastern North Sea	105.	0.134		(200 m)	Lundbeck 1953	4
" "	Northern North Sea	126.	0.209		(200 m)	"	4
" "	Celtic Sea	126.	0.217			Letaconnoux 1954	4
" "	ICNAF 3K 51° N 53° W	66.6	0.419			Figueras 1964	4
" "	ICNAF 1B 66° N 54° W	90.6	0.236		(200 m)	"	4
" "	ICNAF 3L 46° N 47° W	101.	0.125		(200 m)	"	4
" "	Northern North Sea 60° N 3° E	119.	0.269		(200 m)	Daan 1974	4
" "	Southern New England	98.8	0.281		(200 m)	Schoeder 1930	00
" "	Lofoten	95.9	0.284		(200 m)	Rollefsen 1934	00
" "	ICNAF Subarea 4	124.	0.118			Martin 1953	00
" "	Southern Baltic	120.	0.13			Draganik & Netzel	0
" "	ICNAF 3L 46° N 47° W	83.9	0.245			Figueras 1964	4
" "	Faroe Bank	115.	0.19		(200 m)	Jones 1966	0
" "	ICNAF Area Ps	101.	0.17			May et al. 1965	0
" "	ICNAF Area N-O	130.	0.12			"	0
" "	ICNAF Area 3L	102.	0.16			"	0
" "	ICNAF 2J	65.	0.31			"	0
" "	ICNAF Pn	78.	0.25			"	0
" "	ICNAF 3M	98.	0.15			"	0
" "	ICNAF 3K	77.	0.26			"	0

SPECIES NAME	SAMPLING LOCATION	L_{oo}	K	t_o	NOTES	SOURCE	METHOD	
Family GADIDAE								
Gadus morhua	ICNAF 2J 53° N 53° W	68.5	0.241	-1.57		Figueras 1964	4	
" "	ICNAF 4V 44° N 56° W	110.	0.080	-		"	4	
" "	Eastern Iceland	110.	0.147	-		Jonsson 1965	4	
" "	ICNAF Area 2H	64.	0.24	-		May et al 1965	0	
" "	ICNAF 1B 66° N 54° W	87.	0.314	-		Figueras 1964	4	
" "	ICNAF 3K 51° N 53° W	66.4	0.501	-		"	4	
" "	Faroe Plateau 62° N 7° E	115.	0.19	-0.42	M = 0.17	Jones 1966	0	1
" "	East Iceland	147.	0.096	-		Saemundsson 1923	00	1
" "	South Iceland	128.	0.147	-		"	00	1
Onos cimbrius	Eckernförde Bay, Baltic	43.	0.245	-		Hoffmeister 1957	4	
Brosmius brosme ♂	62° N 5° W	77.6	0.162	-		Joenoes 1961	4	
" " ♀	"	84.3	0.135	-		"	4	
Gadiculus thori	Bay of Biscay 200 m	15.5	0.693	-0.37		Letaconnoux 1947		
Boreogadus saida	Arctic Ocean	22.	0.67	-		in: Beverton & Holt 1959	0	
" "	Barents Sea	23.6	0.472	-		Nikolsky 1957	4	
Gadus macrocephalus	Bering Sea (Virgin stock)	105.	0.157	-		Mosher 1953	4	
" "	Hecate Strait (Canada)	94.	0.27	-		Ketchen 1964	00	
Pollachius pollachius	Southern Ireland	85.6	0.186			Moreau 1964	2	

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Melanogrammus aeglefinus	North Sea	53.	0.20	-		Beverton & Holt 1957	00
" "	ICNAF Subarea 4(N.Scotia Shelf)	67.5	0.195	-		Beverton 1965	0
" "	ICNAF Subarea 3 (Grand Bank)	57.5	0.22	-		"	0
" "	Faroe	77.9	0.22	-		Jones 1962	0
" "	-	96.8	0.115	-0.69		Nikolsky 1957	4
" "	Rockall Island	43.8	0.269	-0.66		Blacker 1971	4
" "	North Sea, "fast growth area"	58.1	0.24	-		Jones 1962	0
" "	" "slow growth area"	48.3	0.28	-		Jones 1962	0
" "	Norway 63° N	89.0	o.123	-1.72		Andersen 1938	4
" "	Iceland	81.0	0.228	-0.25		Blacker 1971	4
" "	Skagerrak	115.	0.084	-1.39		Andersen 1938	4
" "	Barents Sea	75.5	0.234	-		Blacker 1971	4
" "	ICNAF Subarea 5 (Georges Bank)	73.	0.28	-	M = 2.0	Beverton 1965	0
Trisopterus minutus ♂	English Channel	20.	0.42	-	M = 1.1	Menon 1950	00
" " ♀	" "	24.	0.40	-	M 0.9	"	00
" esmarkii	Scotland 59° N 0° longitude	19.0	0.44	-		Raitt 1968	0
" "	" "	19.3	0.59	-	M = 1.6	"	0
" "	Aberdeen Bay & Moray Firth	27.2	0.363	-		Fulton 1901	5

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Theragra chalcogramma	Bering Sea (Virgin stock)	75.8	0.126	–		Mosher 1953	4
" "	Bering Sea	127.	0.078	–		Nikolsky 1957	4
" " ♂	"	79.8	0.097	–		Hirschhorn 1974	4
" " ♀	"	94.4	0.092	–		"	4
Molva molva ♂	North Atlantic 62° N 5° W	132.	0.170	–		Joenoes 1961	41
" ♀	" "	183.	0.118	–		"	41
Molva byrkelange ♂	" "	113.	0.157	–		"	41
" ♀	" "	155.	0.126	–		"	41
Micromestitius poutassou	Faroe Islands	33.4	0.23	-2.94		Raitt 1966	0
" "	Costa Brava, Spain, West Medit.	27.9	0.60	-0.91		Bas 1963	00
" "	Tuscan Archipelago, Italy	28.1	0.48	-1.60		Matta 1959	00
" "	Iceland	34.7	0.36	-1.07		Saemundsson 1929	4
" "	Scotland 57° N 11° W	39.9	0.15	-3.51		Raitt 1966	0
" "	Eastern Spanish Coast, Medit.	31.8	0.365	-1.19		Bas 1965	4
Pollachius virens ♂	Norway 63° N 150 m	87.7	0.211	-0.04		Damas 1909	4
" "	" "	120.	0.15	-0.58	M = 0.3	Schmidt 1959	00
" "	66° N 17° W	128.	0.13	-0.90	M = 0.3	Jones & Jonsson 1971	0
" "	–	106.	0.14	-1.61		Nikolsky 1957	4
" "	Norwegian Sea	107.	0.19	–	M = 0.15	Gottlieb 1957	00

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Lota lota	Petschora River USSR	84.4	0.135	-		Nikolsky 1957	2
" "	Ilmen Lake USSR	66.1	0.210	-		"	2
" "	Oderhaff , Northern GDR	88.	0.24	-	very	Müller 1960	2
" "	Spree River (Neu Zittau) GDR	74.	0.11	-	tentative	"	2
the following data on M. merlangus have been compiled in cooperation with U. Damm, IfM							
Merlangius merlangus	N + W North Sea YCL 1952	37.7	0.426	-0.299		Damm 1975	4
" "	" " 1953	41.4	0.250	-1.71		"	4
" "	" " 1954	34.5	0.524	-0.467		"	4
" "	" " 1955	33.8	0.537	-0.704		"	4
" "	" " 1957	36.6	0.500	-0.559		"	4
" "	" " 1958	42.2	0.323	-0.731		"	4
" "	" " 1959	42.7	0.340	-0.698	YCL 1956 and	"	4
" "	" " 1960	42.5	0.357	-0.720	1964 data not	"	4
" "	" " 1961	37.3	0.440	-0.847	asymptotic	"	4
" "	" " 1962	38.2	0.405	-0.507		"	4
" "	" " 1963	36.4	0.506	-0.317		"	4
" "	" " 1965	40.3	0.471	-0.340		"	4
" "	" " 1966	41.3	0.222	-2.36		"	4
" "	" " 1967	32.9	0.271	0.032		"	4
" "	SE North Sea " 1954	68.9	0.0905	-2.05		"	4

SPECIES NAME		SAMPLING LOCATION		L_∞	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE									
Merlangius merlangus		SE North Sea	YCL 1955	28.5	1.25	0.464		Damm 1975	4
"	"	"	" 1957	94.7	0.0742	-1.48		"	4
"	"	"	" 1958	40.4	0.294	-0.874		"	4
"	"	"	" 1959	39.9	0.324	-0.853	YCL 1956 data not asymptotic	"	4
"	"	"	" 1960	57.4	0.204	-0.688		"	4
"	"	"	" 1961	45.3	0.240	-1.242		"	4
"	"	"	" 1962	63.7	0.150	-1.02		"	4
"	"	"	" 1963	37.4	0.492	-0.160		"	4
"	"	"	" 1964	36.0	0.497	-0.368		"	4
"	"	"	" 1965	40.1	0.324	-1.02		"	4
"	"	"	" 1966	37.7	0.301	-1.57		"	4
"	"	"	" 1967	33.2	0.633	-0.173		"	4
"	"	Moray Firth & Orkney area, North Sea	YCL 1958	66.3	0.146	-1.23		Jones & Hislop 1975	4
"	"	"	" 1959	62.1	0.197	-0.627		"	4
"	"	"	" 1960	31.1	0.323	0.154	YCL 1957 & 1963	"	4
"	"	"	" 1961	39.8	0.396	-0.613	data not	"	4
"	"	"	" 1962	37.7	0.415	-0.375	asymptotic	"	4
"	"	"	" 1964	47.2	0.292	-0.751		"	4
"	"	"	" 1965	36.3	0.619	-0.495		"	4
"	"	"	" 1966	37.0	0.496	-0.516		"	4

SPECIES NAME	SAMPLING LOCATION		Loo	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE								
Merlangius merlangus	Moray Firth & Orkney Area, North Sea	YCL 1967	53.7	0.140	-2.28		Jones & Hislop 1975	4
" "	"	" 1968	34.3	0.741	0.082		"	4
" "	"	" 1969	36.8	0.738	0.119		"	1
" "	Northern area, North Sea	" 1959	37.8	0.567	-0.167		"	4
" "	"	" 1960	52.2	0.167	-2.23		"	4
" "	"	" 1961	43.42	0.180	-3.37		"	4
" "	"	" 1962	80.9	0.0704	-3.176		"	4
" "	"	" 1963	33.9	1.791	1.18		"	4
" "	"	" 1964	75.6	0.107	-2.08	YCL 1957, 1958, " 1965, 1971,	"	4
" "	"	" 1966	50.	0.180	-1.953	data not	"	1
" "	"	" 1967	62.5	0.116	-3.70	asymptotic	"	4
" "	"	" 1969	58.0	0.230	-0.912		"	4
" "	"	" 1970	92.4	0.080	-2.675		"	4
" "	North central area, North Sea	" 1957	33.8	0.556	-0.217		"	4
" "	"	" 1959	38.1	0.432	-0.500		"	4
" "	"	" 1960	34.0	0.653	-0.165	YCL 1958 data	"	4
" "	"	" 1961	38.0	0.370	0.785	not asymptotic	"	4
" "	"	" 1962	55.2	0.158	-1.46			
" "	"	" 1963	39.0	0.560	0.018		"	4
" "	"	" 1964	50.	0.272	-0.657		"	1

SPECIES NAME	SAMPLING LOCATION	Lœ	K	t_o	NOTES	SOURCE	METHOD
Family GADIDAE							
Merlangius merlangus	North central area, North Sea YCL 1965	49.2	0.256	−1.05		Jones & Hislop	4
" "	" " 1966	35.8	0.656	−0.070	YCL 1967 data	"	4
" "	" " 1968	60.8	0.198	−0.803	not asymptotic	"	4
" "	" " 1969	50.	0.280	−0.995		"	1
" "	" " 1970	43.6	0.278	−1.73		"	4
" "	Central area, North Sea " 1957	32.9	0.649	−0.208		"	4
" "	" " 1959	45.5	0.278	−0.852		"	4
" "	" " 1960	57.3	0.229	−0.513		"	4
" "	" " 1961	29.5	1.533	0.307		"	4
" "	" " 1962	45.9	0.217	−1.09		"	4
" "	" " 1964	31.9	0.928	−0.065		"	4
" "	" " 1965	35.1	0.714	−0.096	YCL 1958 data	"	4
" "	" " 1966	66.4	0.105	−2.47	not asymptotic	"	4
" "	" " 1967	47.5	0.207	−1.246		"	4
" "	" " 1968	36.5	0.632	−0.216		"	4
" "	" " 1969	56.5	0.173	−1.64		"	4
" "	" " 1970	35.4	0.548	−0.767		"	4
" "	N + E North Sea & Morray Firth	44.2	0.383	−0.44		Ellis & Jones 1956	0
" "	SE North Sea	40.0	0.29	−0.51		Knudsen 1964	0
" "	W North Sea	44.44	0.23	−1.07		"	0

SPECIES NAME		SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD	
Family GADIDAE									
Merlangius merlangus		Skagerak	39.53	0.33	-0.55		Knudsen 1964	0	
" "		Skagerak - Kattegat	39.9	0.69	-	tagging data	"	0	
" "		NW North Sea	37.4	0.47	-	"	"	0	
" "		Skagerak	43.9	0.266	-1.132		in: Desbrosses 1948	4	
" "		Skagerak - Kattegat N	62.4	0.162	-		in: Messtorff 1959	4	
" "		Belt Sea S	37.8	0.458	-		"	4	
" "	♀	Bay of Biscay	70.	0.238	-		in: Desbrosses 1948	1	
" "		Iceland	71.0	0.250	-		Saemundsson 1925	4	1
" "	♂	Irish Sea	54.7	0.151	-		Bowers 1954	4	69
" "		Clyde, Scotland	54.5	0.322	-0.48		Garrod & Gambell 1965	0	1
" "		West Coast, Scotland	45.0	0.483	-0.42		"	0	
" "		Baltic Sea	44.0	0.247	-		Hoffmeister 1957	00	
" "	♂	North Sea YCL 1958	32.1	0.729	-0.0797		Hannerz 1964	00	
" "	♀	" "	38.9	0.492	-0.0567	back calculated	"	00	
" "		" "	36.3	0.554	-0.0333	lengths from	"	00	
" "	♂	" 1959	39.9	0.399	-0.273	3-years old	"	00	
" "	♀	" "	47.3	0.318	-0.199		"	00	
" "		" "	44.2	0.341	-0.265		"	00	

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family GASTEOSTEIDAE							
Gasteosteus aculeatus ♂	Brackish Waters, Roscoff, France	4.6	4.20	-0.01		Bertin 1923	4
" " ♀	" "	6.0	2.40	-0.04		"	4
" "	Kiel Bay, eelgrass belt	6.9	1.79	-0.285		Worthmann 1975	4
" "	Ooster Schelde, Holland	6.7	2.32	-		van Mullem & van der Vlugt 1964	4
Apeltes quadracus ♂	Chesapeake Bay, eelgrass	4.8	1.50	-		Schwarz 1965	41
" " ♀	" "	7.0	0.84	-		"	41
Spinachia spinachia	Kiel Bight, eelgrass	17.	1.78	-		Worthmann 1975	41
Pygosteus pungitius	Cheshire, England	4.3	1.60	-	M = 1.1	Jones & Hines 1950	00
Family GERREIDAE							
Gerres punctatus	Ambaro Bay, Madagascar	21.9	2.616	-		Chabanne & Plante 1969	51
" "	" "	32.9	0.756	-		"	51
" "	" "	26.9	1.788	-		"	51
Diapterus rhombeus	Puerto Rico, Southwest	22.0	2.196	-		Austin 1971	51

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family GOBIIDAE							
Gobiosoma robustum ♂	Tampa Bay, Florida	3.6	2.006	–		Springer & McErlan 1961	5
" " ♀	" "	6.	0.813	–		"	5
Gobius paganellus	tidal pools, Isle of Man	11.6	0.408	–	M = 0.57	Miller 1961	4
Microgobius thalassinus ♂	Chesapeake Bay, 10–15 m	5.5	2.407	–		Schwarz 1971	1
" " ♀	" "	6.9	1.388	–		"	1
Pomatochistus microps	Isle of Man, River mouths	11.2	0.295	–		Miller 1975	4
" minutus	Dutch Wadden Sea	9.2	0.928	-0.01		Fonds 1973	0
" "	Gullmarsfjord, Sweden 58° N	7.1	1.38	-0.32		Swedmark 1957	4
Gobius cobitis	Roscoff, France	25.3	0.217	–		Gibson 1970	4
Family HARPADONTIDAE							
Harpadon neherus	Bombay, India	35.	0.52	–		Bapat 1970	41
" "	"	28.4	0.85	–		Bapat et al. 1952	41
Family HOLOCENTRIDAE							
Holocentrus diadema	Eilat, Red Sea	16.8	1.129	-0.12		Gundermann & Popper 1975	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family ICTALURIDAE							
Ictalurus punctatus	St. Laurent River, Quebec	83.4	0.056	-1.92		Magnin & Fradette 1975	0
Family ISTIOPHORIDAE (LF and including bills)							
Istiophorus platypterus	Western North Atlantic	220.	1.10	–		De Sylva 1957	00
" "	" "	243.	1.20	–		Mather III et al. 1974	3
" "	East China Sea	341.	0.442	–		Koto & Kodama 1962	3
Makaira nigricans ♂	Hawaii	371.	0.285	–		Skillman & Young 1976	0
" " ♀	"	659.	0.116	–		" "	0
Tetrapterus albidus		261.	0.58	–	tagging, best growth only	Mather et al. 1974	3
" audax	Western North Pacific	273.	0.262	–		Koto 1963	3
" "	East Africa 5° S 43° E 400 m	312.	0.201	–		Merett 1971	4
" " ♂	Hawaii	277.	0.417	-0.52		Skillman & Young 1976	0
" " ♀	"	240.	0.810	–		"	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family LABRIDAE							
Ctenilabrus tinca ♂	Black Sea, Soviet Coast	28.4	0.183	–		Kalinina 1963	41
" " ♀	" "	21.4	0.186	–		"	4
" quinquemaculatus ♂	" "	16.7	0.303	–		"	4
" " ♀	" "	15.0	0.200	–		"	4
" rupestris	Nyborg Fjord, Danemark	20.	0.412	–		in: Johansen 1925	41
" " ♂	Roscoff, France	16.1	0.307	–		Guinard 1966	4
" " ♀	" "	15.4	0.297	–		"	4
Labrus berggylta ♂	" "	57.8	0.113	–		"	4
" " ♀	" "	61.1	0.100	–		"	4
" "	St. Andrew Bay, Western Gr.Brit.	38.4	0.194	–	1 specimen (backcalculated)	Meek 1916	4
" bimaculatus ♂	Sète, Mediterranean, France	34.1	0.133	–		Guinard 1966	4
" " ♀	" "	42.9	0.093	–		"	4
Symphodus cinereus ♂	Arcachon, France	15.5	0.348	–		"	4
" " ♀	" "	14.3	0.291	–		"	4
" exoletus ♂	Sud Finistère (Bretonny, France)	12.9	0.713	–		"	4
" " ♀	" "	12.3	0.618	–		"	4
" mediterraneus ♂	Sête, Mediterranean, France	17.0	0.628	–		"	4
" " ♀	" "	15.7	0.470	–		"	4
" melops ♂	Roscoff, France	24.2	0.409	–		"	4
" " ♀	" "	21.4	0.308	–		"	4

SPECIES NAME	SAMPLING LOCATION	L_{∞}	K	t_o	NOTES	SOURCE	METHOD
Family LABRIDAE							
Symphodus occellatus ♂	Toulon, France	10.8	0.949	–		Guinard 1966	4
" " ♀	" "	10.3	0.645	–		"	4
" roissali ♂	Sète, Mediterranean	13.6	0.617	–		"	4
" " ♀	" "	13.0	0.593	–		"	4
" rostratus ♂	Toulon, France	11.6	0.898	–		"	4
" " ♀	" "	10.6	0.709	–		"	41
" "	Villefranche-sur-Mer, France	14.2	0.363	-0.69		Nival 1966	41
" tinca ♂	Sète, Mediterranean	31.3	0.248	–		Guinard 1966	4
" " ♀	" "	24.8	0.244	–		"	4
Tautoga onitis ♂	Rhodes Islands, USA	58.2	0.147	–		Cooper 1967	4
" " ♀	" "	49.5	0.182	–		"	4
Tautogalabrus adspersus	Weweantic River Estuary, Mass. USA	28.5	0.198	–		Serchuk & Cole 1974	0
" " ♂	$41^{o}20'$ N $71^{o}55'$ W 20 m	29.7	0.222	–		Dew 1976	4
" " ♀	" "	24.2	0.239	–		"	4
" "	Gulf of St. Lawrence	37.	0.152	–		Johansen 1925	41
Thalassoma bifasciatum	Florida (open air aquarium)	17.	0.75	–		Feddern 1965	4
Xyrichthys novaculata	Balearic Islands	26.1	0.264	–		in: Guinard 1966	4
Labrus merula ♂	Sète, France	44.	0.215	–		Guinard 1966	1
" " ♀	" "	35.1	0.252	–		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family LACTARIIDAE							
Lactarius lactarius	Waltair, India	32.	0.854	-		Apparao 1966	5
Family LAMNIDAE							
Lamna nasus	Atlantic, 44° N 62° W 30 m	280.	0.111	-	M 0.18	Aasen 1963	00
Family LATIMERIDAE							
Latimeria chalumnae ♂	East Africa	150.	0.26	-0.94	very rough	Hureau & Ozouf 1977	1
" " ♀	East Africa	200.	0.15	-1.16	estimates	"	1

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD	
Family LEIOGNATHIDAE								
Leiognathus bindus	Calicut, India	12.7	2.04		-	Balan 1967	5	
" "	Manilla Bay, Philippines	11.3	2.06		Feb. brood	Tiews et al. 1965 *	5	
" "	" "	10.5	2.24		May "	"	5	
" "	" "	10.2	2.63		Sept. "	"	5	
" "	" "	10.3	2.58		Dec. "	"	5	
" "	" "	9.5	2.42		March "	"	5	
" daura	" "	8.1	2.93		Jan. "	"	5	
" "	" "	8.5	2.52		Sept. "	"	5	
" equulus	Ambaro Bay, Madagascar	21.1	1.88		July "	Chabanne & Plante 1969	5	
" "	" "	21.2	1.73		Sept. "	"	5	
" lineolatus	Manilla Bay, Philippines	9.8	2.10		Febr. "	Tiews et al. 1965	5	
" "	" "	8.8	2.60		Dec. "	"	5	
" "	" "	8.6	2.83		Jan. "	"	5	
" nuchalis	Kasaoka Bay, Japan	12.0	2.56		-	Kakuda, pers. comm.	5	
" splendens	San Miguel Bay, Philippines	13.5	1.03		April "	Tiews et al. 1965	5	
" "	" "	11.7	1.12		March "	"	5	
" "	" "	11.7	1.20		March "	"	5	
" "	" "	13.0	1.60		Aug. "	"	5	
" "	" "	14.3	1.04		April "	"	5	

*Tiews et al. (1965) do not state which length was measured. Total length ?

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family LETHRINIDAE							
Lethrinus enigmaticus	Indian Ocean 10°30'N 62° E	62.6	0.149	-1.21	M = 0.2	Lebeau & Cueff 1975	0
" "	Indian Ocean 10°30'N 62° E	52.6	0.179	-1.07	M = 0.2	"	0
" lentjan	Gulf of Manaar,, India	64.0	0.27	-		Toor 1964	0
Family LOPHIIDAE							
Lophius piscatorius	Bay of Fundy, Canada	197.	0.060	-0.08		Connoly 1920	4
" "	Aberdeen, Scotland 40 m	137.	0.164	-0.06		Fulton 1903	41
Family LUTJANIDAE							
Lutjanus griseus	Everglades, Florida	55.	0.167	- V		Crocker 1962	41
" purpureus	off Recife, Brazil	96.7	0.096	-1.20		Fonteles-Filho 1970	4
" synagris	Cuban Waters	42.2	0.268	-0.44 V		Rodriguez-Pino 1962	4
" "	off Caera State, Brazil	50.5	0.231	-0.19		Alegria & Ferreirade Menezes 1970	0
" purpureus	North Eastern & Northern Brazil	98.9	0.090	-	M=0.37 from other source	Ferreira de Menezes & Vasconcelor Gesteira 1974	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family MACRORHAMPHOSIDAE							
Macrorhamphosus scolopax	Meteor Sea Mound, Cent. East Atl.	16.5	0.745	-0.24		Ehrich 1976	0
Family MACROURIDAE							
Macrurus rupestris ♂	N-W Atlantic 2000 m	105.	0.082	-		Sarratimskii 1973	41
" " ♀	"	110.	0.099	-		"	41
Nezumia glerorhynchus	Alboran Sea 500-800 m	26.4	0.160	-		Rannou 1976	0
" steglipedis	Gulf of California 500 m	43.	0.20	-		Mathew 1974	4
Trachyrinchus trachyrinchus ♂	off Monaco, Mediterranean, 500 m	45.6	0.347	-0.95		Motais 1960	4
" " ♀	"	49.3	0.222	-2.28		"	4
Family MAENIDAE							
Maena smaris	Adriatic	21.	0.218	-1.79		Zei 1951	41

SPECIES NAME		SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD	
Family MERLUCCIDAE									
Merluccius merluccius		Gulf of Biscay	105.	0.184	–		Belloc 1929	4	
"	"	off Morocco	85.	0.210	–		Maurin 1954	41	
"	"	off Morocco 30-40° N	100.	0.158	–		Belloc 1929	4	
"	"	off Ireland	83.9	0.296	–		"	4	
"	"	off Morocco, Agadir Bight	112.	0.121	–		Maurin 1954	41	
"	"	Mediterranean, off Fano, Italy	42.1	0.405	-0.01		Ghirardelli 1959	41	
"	"	Mediterranean, North Africa	38.4	0.220	–		Belloc 1929	4	
"	" ♂	Marmara Sea	44.	0.13	–	M = 0.6	Akyüz 1959	00	I
"	" ♀	Marmara Sea	60.	0.10	–	M = 0.5	"	00	
"	"	Central Adriatic 43°20' N 15°10'E	62.	0.344	–		Zupanović 1968	4	I
"	"	Mediterranean	65.3	0.181	–		Letaconnoux 1955	4	
"	"	off Tunisia	40.	0.2	–		Matta 1956	4	
"	"	Can Farré Bank, Costa Brava	28.9	0.634	–	400 m	Figueras 1967	4	
"	"	Malica Bank, Costa Brava, Spain	59.6	0.39	–	500 m	"	4	
"	"	Barana Bank, "	60.8	0.255	–	700 m	"	4	
"	"	Capet Bank, "	19.7	0.446	–	90 m	"	4	
"	"	off Castellon, Spain	43.3	0.142	–		"	4	

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family MERLUCCIDAE							
Merluccius gayi ♂	off Chile	54.0	0.428	–		Aguayo 1971	4
" " ♀	off Chile	81.9	0.203	–		"	4
" " ♂	off Peru 7° S 80-81° W	67.9	0.190	-0.38		Misu & Hamasaki 1971	0
" " ♀	off Peru 7° S 80-81° W	116.	0.092	–		"	0
" "	off Chile, Valparaiso	106.	0.100	-0.07		Alberti & Zuniga 1966	00
" " ♂	off Chile	49.	0.45	–		Saetersdal & Villegas 1968	0
" " ♀	off Chile	62.	0.36	–		"	0
" cadenati	off Dakar, Senegal 200 m	64.4	0.394	–		Doutre 1960	41
" hubbsi ♂	46° S 63° W, Argentina, 90 m	51.5	0.308	-0.14		Rojo & Silvosa 1969	4
" " ♀	" "	85.9	0.128	-0.59		"	41
" productus ♂	off Portland, Oregon 100 m	56.3	0.39	–	M = 0.56 Ehrich, pers. comm.	Dark 1975	0
" " ♀	" "	61.2	0.30	–	M = 0.56 Ehrich, pers. comm.	"	0
" senegalensis	off Dakar, Senegal 200 m	85.2	0.171	-0.61		Doutre 1960	41
" augustimanus	Gulf of California, Southeast	38.	0.335	–		Mathews 1974	41
" capensis	South Africa	141.	0.091	–		Botha 1971	0

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family MUGILIDAE							
Mugil cephalus ♂	Taiwan Waters 15 m	49.8	0.393	0.05	LT ? M = 0.31	Ih-Hsiu Tung 1970	0
" " ♀	" "	59.3	0.301	-0.12		"	0
" " ♂	Tunisian Coast	48.6	0.29	-	LT ?	Farrugio 1975	0
" " ♀	"	54.6	0.20	-		"	0
" "	Turkey (Bosphorus)	105.	0.11	-		Erman 1959	4
" " ♂	Texas Coast	40.	0.367	-0.48		Cech & Wohlschlag 1975	4
" " ♀	"	42.2	0.327	-0.70		"	4
" "	Sea of Marmara, Turkey	71.5	0.254	-		Erman 1959	41
" "	Australia	65.	0.271	-0.15	LT ?	Kesteven 1942	4
" labrosus ♂	Tunisian Lagoons	37.8	0.36	0.06		Farrugio 1975	0
" " ♀	" "	57.4	0.17	-0.51		"	0
" labrosus	Caspian Sea	47.1	0.188	-1.33		Nikolsky 1957	4
" ramada ♂	Tunisian Lagoons	31.6	0.45	-0.40		Farrugio 1975	0
" " ♀	" "	40.5	0.31	-0.23		"	0
" saliens	-	34.3	0.208	-0.48		Aleev 1956	4
" " ♂	Lake Quarum (brackish) Egypt	36.5	0.288	-1.23		El Zarka & El Zedfy 1970	4
" " ♀	" "	41.9	0.195	-1.90		"	4
" cunnesius	Bengal, India	29.2	0.31	-		Sarojini 1958	00
" parsia	" "	30.7	0.32	-	LT ?	" 1957	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD	
Family MUGILIDAE								
Liza provinsalis	-	44.1	0.282	-0.86		Nikolsky 1957	4	
" aurata	Brackish Waters, Italy	53.7	0.341	-		in: Bougis 1952	4	
" "	Black Sea	54.1	0.199	-		Nikolsky 1957	4	
" "	Gulf of Biscay	34.5	0.366			Arné 1938	4	
" "	Caspian	66.	0.169			Nikolsky 1957	4	
Family MYCTOPHIDAE								
Benthosema glaciale	Canadian Waters (East)	8.5	0.36	-0.23	M = 1.75	Halliday 1970	00	1
" "	Norwegian Fjords, below 100 m	8.6	0.45	-	M = 0.74	Gjösaeter 1970	0	82
Lobianchia dofleini	off Bermuda	4.6	1.386	-		Karnella & Gibbs 19	1	1
Myctophum affine	29-31° N 149-154° E	10.0	0.42	-0.23		Odate 1966	4	
" punctatum	North West African, upwelling Area	9.0	0.32	-0.91		Wörner 1975	41	
Notolychnus valdiviae	24° S 110° E 200 m	2.8	1.411	-0.16		Legand 1967	4	
Stenobrachius leucopsaurus	off Monterey Bay, California	14.3	0.244	-0.23		Bolin 1956	4	

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family NEMIPTERIDAE							
Nemipterus bathybius ♂	Hongkong Shelf 50 m	30.2	0.324	-0.80		Eggleston 1972	41
" bleekeri	off Brunei 30-40 m	30.4	0.439	–	M = 1.4	Weber & Jothy , undated	41
" hexodon	" "	27.8	0.494	–	M = 1.0	"	41
" delagoae	" "	27.8	0.701	–	M = 2.2	"	41
" marginatus	" "	28.4	0.368	–	M = 1.6	"	41
" mesoprion	" "	19.5	0.629	–	M = 0.6	"	41
" nematophorus	" "	27.3	0.531	–	M = 1.9	"	41
" nemurus	" "	28.9	0.264	–	M = 1.3	"	41
" peronii	" "	28.9	0.455	–	M 1.4	"	41
" tolu	" "	26.8	0.523	–	M 0.4	"	41
" sp.	" "	31.5	0.440	–	M 1.3	"	41
" virgatus ♂	112,5° E 20,8° N 70 m	37.6	0.397	-0.42		Eggleston 1970	4
" " ♀	" "	35.	0.237	–		" 1972	41
" " ♂	Hongkong, South West of	44.7	0.408	-0.12		"	4
" " ♀	Pearl River Mouth 50 m	36.2	0.352	-0.71		"	4
" "	21.3° N 114° E	44.0	0.348	–		Li Kwang Ming 1960	4
" "	" "	47.0	0.298	–		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family NEMIPTERIDAE							
Nemipterus japonicus	1964-65 Andhra-Orissa Coast, India	30.5	0.314	-1.11		Krisnamoorthi 1971	0
" "	1965-66 " "	20.9	0.648	-	"draught period"	"	0
" "	1966-67 " "	30.7	0.294	-		"	0
" " ♂	Hong Kong	38.	0.13	-		Jones 1976	0
" " ♀	"	34.	0.19	-		"	0
" "	off Brunei 30-40 m	28.9	0.470	-	M = 2.3	Weber & Jothy MS	41

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD	
Family NOTOTHENIDAE								
Notothenia cyanobrancha	Kerguelen Islands, Antarctica	39.1	0.186	–		Hureau 1970	0	
" macrocephala	" "	46.4	0.26	-0.4		"	0	
" neglecta ♂	Sygny Islands "	45.3	0.129	-0.8	M = 0.36	Everson 1970	0	
" " ♀	" "	51.6	0.091	-1.7	M = 0.36	"	0	
" " ♂	Terre Adélie "	36.	0.22	–		Hureau 1970	41	
" " ♀	" "	48.	0.22	–		"	41	
" rossii ♂	South Georgia "	86.	0.128	–		Olsen 1954	4	
" " ♀	" "	92.	0.124	–		"	4	I
" "	" "	44.7	0.293	–		Crisp & Carrick 1975	4	85
Trematomus bernachii ♂	Terre Adélie "	28.6	0.185			Hureau 1970	4	I
" " ♀	" "	31.4	0.192			"	4	
" " ♂	McMurdo Sound "	20.0	0.557			Wohlschag 1961	4	
" " ♀	" "	25.5	0.370			"	4	
" " ♂	" "	23.	0.36			" 1962	0	
" " ♀	" "	30.7	0.42			"	0	
" hansoni ♂	Terre Adélie "	26.8	0.255	–		Hureau 1970	41	
" " ♀	" "	37.3	0.229	–		"	41	

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family OSMERIDAE							
Osmerus eperlanus	*Elbe Estuary, FRG*	32.2	0.274	–		Lillelund 1961	4
" "	Ilmen Lake, USSR	17.0	0.336	–		in: Belyanina 1958	2
" "	Rybinsk Reservoir, USSR	9.6	1.386	–		"	2
" "	Dadey Lake (formerly Eastern Prussia)	13.3	0.875	–		"	2
" "	Onega Lake, USSR	12.6	0.370	–		"	2
" "	Kurishes Haff, Baltic	32.4	0.257	–	Sea migrants	"	2
" "	Neva River, USSR	25.1	0.210	–		"	2
" "	Basin of Maine River, USA	31.8	0.313	–		"	2
" "	White Sea, Dvina Bay	38.3	0.152	–		"	2
" "	" , Kandalaksha Bay	30.9	0.379	–		"	2
" "	Chesha Bay	31.8	0.181	–		"	2
" "	Yenisey River, USSR	28.8	0.252	–		"	2
Mallotus villosus ♂	Labrador	20.	0.48	–	} M = 1.3	Templeman 1948	00
" " ♀	"	19.	0.48	–		"	00
" " ♂	Barents Sea & Finmark Coast	27.8	0.259	-0.82		Dragesund et al. 1973	4
" " ♀	" "	19.8	0.454	-0.53		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family PANGASIDAE							
Pangasius pangasius	Ganga & Hoogly Rivers, India	227.	0.043	0.56	bad fit, L_∞ too high	Pantulu 1962	0
Family PLATYCEPHALIDAE							
Neoplatycephalus macrodon	Marion Bay, Tasmania 43° S	65.2	0.197	–	≈50 m	Fairbridge 1951a	4
" "	Eastern Australia 35°30' S	79.1	0.175	–	"	"	4
" "	" 34° S	65.6	0.246	–	"	"	4
" "	" 37° S	56.5	0.302	–	"	"	4
" " ♂	New South Wales, Australia	52.0	0.376	–	"	Fairbridge 1951b	4
" " ♀	" "	62.2	0.292	–	"	"	4

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family PERCIDAE							
Perca schenki	lower Ili River, USSR	60.	0.069	–	p. 404	Nikolsky 1957	2
" flavescens ♂	Saginaw Bay, Lake Huron	42.9	0.193	–		Hile & Jobe 1941	2
" " ♀	" "	49.3	0.165	–		"	2
" fluviatilis	Aral Lake, USSR	23.3	0.405	–		Nikolsky 1957	2
" "	Pestchora, USSR	38.0	0.124	–		"	2
" "	Sweden	30.	0.20	–	M = 0.29	Alm 1952	00
" "	"	34.	0.13	–	M = 0.16	"	00
" "	Orava Reservoir, Slovakia	41.9	0.123	–		Hnatevič 1960	2
" "	–	36.9	0.119	–	"reservoir"	in: Hnatevic 1960	2
" "	–	29.3	0.354	–	"25 lakes"	"	2
Stizostedion glaucum	Lake Erie, USA	54.4	0.237	–		Deason 1933	2
" canadensis	Lake Nipigon, Canada	40.	0.14	–	M = 0.44	Beverton & Holt 1959	0
" "	Lake Erie, USA	54.4	0.237	–		Deason 1933	2
" vitreum ♂	Lake La Ronge, Canada 10 m	110.	0.055	–	max. c.p.u.e. at 16.5° C	Rawson 1956	2
" " ♀	" "	137.	0.037	–	max. c.p.u.e. at 16.5° C	"	2
Lucioperca lucioperca	Kuban River, USSR	85.6	0.238	–		Nikolsky 1957	2
" "	Don River, USSR	86.	0.168	–		"	2
" "	Aral Lake, USSR	79.5	0.204	–		"	2
" "	Ilmen Lake, USSR	104.	0.129	–		"	2
" "	Southern Caspian, USSR	40.	0.333	–		"	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family PLEURONECTIDAE							
Eopsetta jordani ♂	British Columbia	49.	0.160	-2.60		Ketchen & Forrester 1966	0
" " ♀	" "	58.6	0.167	-		"	0
Isopsetta isolepis ♂	Canada, West Coast	38.	0.36	-		Hart 1948	0
" " ♀	" "	42.	0.26	-		"	0
Lepidopsetta bilineata	Bering Sea (Virgin Stock)	73.5	0.098	-		Mosher 1953	4
Glyptocephalus cynoglossus ♂	Isle of Man 70 m	30.9	0.312	-		Bower 1959	0
" " ♀	"	36.1	0.38	-		"	0
Limanda aspera ♂	Peter the Great Bay 1928 Virgin	74.4	0.085	-		Nikolsky 1957	4
" " ♀	" " 1933 exploit.	52.2	0.148			"	4
Lophopsetta aquosa	Hell Hole, Rhodes Island	41.	0.242			Moore 1947	41
Parophrys vetulus ♂	Puget Sound, Washington	30.7	0.347			Holland 1969	4
" " ♀	" "	41.6	0.243			"	4
Rheinhardtius hippoglossoides	West Greenland 400 m				M = 0.48	Smidt 1969	4
" "	Okhotsk Sea	109.	0.074			Nikolsky 1957	4
" "	Barents Sea	138.	0.056			"	4
Pleuronectes platessa ♂	North Sea	45.	0.15		M = 0.22	Beverton & Holt 1959	0
" " ♀	"	70.	0.08		M = 0.12	"	0
" "	Barents Sea	59.	0.115			Nikolsky 1957	4
" quadrituberculatus	Bering Sea, Virgin Stock	57.	0.099			Mosher 1953	41

SPECIES NAME	SAMPLING LOCATION	$L\infty$	K	t_o	NOTES	SOURCE	METHOD
Family PLEURONECTIDAE							
Pseudopleuronectes americanus	Canada, East Coast	44.	0.4	-	M = 0.3	Dickie & McCracken 1955	00
" "	Peronic & Gardiners Bay, Long Island	50.6	0.175	-		McCracken 1954	4
" "	Anapolis Bay, USA	43.6	0.323	-		"	4
" "	Passamaquoddy Bay	41.6	0.195	-		"	4
" " ♂	Narraganset Bay, Rhode Island	43.6	0.199	-		Berry et al. 1965	4
" " ♀	" "	45.5	0.283	-		Berry et al. 1965	4
" "	Northumberland Strait	39.5	0.259	-		McCracken 1954	4
" "	Pubnico Bay	57.7	0.117	-		"	4
" " ♂	Charlestown "Pond", Rhode Isl.	32.6	0.428	-		Berry et al. 1965	4
" " ♀	" "	39.8	0.384	-		"	4
Plathychthys stellatus ♂	California 41° N 125° W	44.8	0.229	-		Orcutt 1950	4
" " ♀	" "	51.0	0.192	-		"	4
" "	Bering Sea (Virgin Stock)	44.3	0.303	-		Mosher 1959	4
" flesus ♂	Kiel Bight, Baltic	39.1	0.377	-0.179	M = 0.18	Saeger 1974	0
" " ♀	" "	46.5	0.302	-0.291		"	0
" "	" "	47.3	0.229	-		Hohendorf 1966	0
Drepanopsetta plattessoides ♂	" , Western Baltic	25.3	0.337	-0.28		Krüger 1942	4
" " ♀	" "	36.1	0.428	-		"	4

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family PLEURONECTIDAE							
Hippoglossoides platessoides ♂	46° N 56° W 50-200 m	65.6	0.08	-1.21		Minet 1974	0
" " ♀	" "	80.7	0.06	-1.45		"	0
" "	ICNAF Res.Div. 3L 1957-60	64.2	0.08	-		Pitt 1975	0
" "	" 3L 1969-72	80.2	0.076	-		"	0
" "	" 3N 1965-68	72.9	0.099	-		"	0
" "	" 3L 1961-64	65.9	0.084	-		"	0
" "	" 3N 1957-60	64.2	0.108	-		"	0
" "	" 3N 1969-72	72.5	0.125	-		"	0
" "	" 3L 1965-68	72.5	0.067	-		"	0
" "	" 3N 1961-64	70.4	0.093	-		"	0
Hippoglossus hippoglossus ♂	North Atlantic	170.	0.04	-		Devold 1938	00
" " ♀	"	250.	0.02	-		"	00
" "	Alaska, Portlock Albatros Ground	215.	0.054	-		Southward & Chapman 1965	4
" "	Bering Sea (Virgin Stock)	132.	0.105	-		Mosher 1959	41
" "	Northern Norway 71° N 27° E 500 m	131.	0.2	-	0.20	Mathisen & Olsen 1968	0
" "	" "	303.	0.03	-		"	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family PLOTOSIDAE							
Plotosus anguillaris	Ago Bay, Japan	27.	0.449	-		Kajikawa 1973	4
" "	Tamioka Bay, Japan, eelgrass	28.4	0.445	-		Kikuchi 1966	4
Tandanus tandanus	North West of Sydney, Australia	59.6	0.341	-	fresh water	Davis 1977	0
Family POLYNEMIDAE							
Galedoides decadactylus	off Sierra Leone 50 m	75.2	0.139	-0.08		Longhurst 1963	4
" "	off Lagos, Nigeria 50 m	54.5	0.41	-		" 1965	0
Pentanemus quinarius	off Sierra Leone 50 m	36.8	0.382	-		" 1963	41
" "	off Lagos	34.	1.081	-0.14		" 1965	41
Polynemus indicus	Indian Coast (E) 22° N 50 m	150.	0.189	-0.441		Kagwade 1970	1
Family POLYODONTIDAE							
Polyodon spathula	Mississipi River, USA	113.	0.581	-		Adams 1942	4
Family POMACENTRIDAE							
Amphiprion chrysopterus	Enivetok Atoll, Pacific	11.3	0.812	-		Allen 1975	3
" melanopus	" "	9.1	0.528	-		"	3
" perideraion	" "	9.7	0.480	-		"	3
" triciuctus	" "	16.5	0.360	-		"	3

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family POMADASYDAE							
Brachydeuterus auritus	Lagos, Nigeria 50 m	20.6	0.363	-		Raitt & Sagua 1969	4
" " ♂	Togo 30-40 m	25.3	0.292	-		Beck 1974	0
" " ♀	Togo 30-40 m	24.7	0.322	-		"	0
" "	Ivory Coast 30-50 m	25.3	0.4	-		Barro 1968	0
Pomadasys hasta	India 20° N 70° E	74.1	0.274	-		Deshmukh 1973	4
" "	Bombay, India	62.2	0.496	-		Nammalwar 1974	4
Pristipoma jubelini	Sierra Leone 50 m	45.	0.3	-		Longhurst 1963	41
Parapristipoma trilineatum	Japan, Miara Peninsula	32.8	0.342	-0.43		Masuzawa 1967	4
Parapristipoma trilineatum	" " "	52.6	0.352	-		Yasuda et al. 1962	4
Rhonciscus striatus	Gulf of Suez	18.	0.300	-		Latif & Shenouda 1972	4
Family POMATOMIDAE							
Pomatomus saltatrix	Natal, South Africa	84.	0.197	-		van der Elst 1976	0
" "	Cape Cod, USA	115.	0.135	-		Backus 1962	4
Family PSETTODIDAE							
Psettodes erumei ♂	Gulf of Thailand	33.1	0.330	-0.63		Kühlmorgen-Hille 1977	4
" " ♀	"	50.9	0.265	-0.18		"	4
Family RACHYCENTRIDAE							
Rachycentron canadus ♂	Chesapeake Bay Area	134.	0.21	-		Richard 1967	0
" " ♀	" "	160.	0.20	-		"	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family RAJIDAE							
Raja brachyura ♂	Irish Sea	139.	0.12	-1.52		Holden 1972	0
" " ♀	"	118.	0.19	-0.8		"	0
" clavata ♂	"	85.6	0.21	-0.60		"	0
" " ♀	"	128.	0.09	-1.32		"	0
" eglanteria	lower Delaware Bay, USA	78.5	0.20	-1.78		Fitz & Daiber 1963	4
" erinacea	Long Island Sound, USA	52.1	0.290	-0.83		Richard et al. 1963	4
" "	" "	53.5	0.287	-0.91		"	4
" hollandi ♂	East China Sea	57.0	0.521	-		Ishiyama 1951	4
" " ♀	"	62.9	0.408	-		"	4
" " ♂	"	45.5	1.29	-		"	4
" " ♀	"	50.	1.34	-		"	41
" montagui ♂	Irish Sea	68.7	0.19	-0.56		Holden 1972	0
" " ♀	"	72.8	0.18	-0.37		"	0
Family SCARIDAE							
Scarus coeruleus	Virgin Islands, Caribbean	61.5	0.325	-		Randall 1962	31
" guacamaia	" "	80.	0.293	-		"	31
" vetula	" "	53.4	0.599	-		"	31
Sparisoma chrysopterum	" "	41.8	0.782	-		"	31
" rubripinne	" "	46.5	0.584	-		"	31

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SALMONIDAE							
Salmo trutta	Loch Leven 56°12' N 3°22'	40.6	0.276	-		Thorpe 1974	0
" "	River Gryfe, Scotland	63.5	0.178	-		Mackay 1970	2
" "	Douglas Waters, Scotland	34.7	0.275	-		"	2
" "	Northern Sweden, Baltic	98.8	0.219	-1.26		Rosen 1918	00
" "	Farver Au (FRG), Baltic	119.	0.108	-2.14		Gelhaar 1972	0
" "	Rantzau (FRG), North Sea	84.	0.262	-0.92		"	0
" "	Vistula, Baltic	142.	0.173	-1.69		Chrzan 1959	00
" "	"Stolpe" (?), Baltic	89.1	0.603	-0.34		"	00
" "	"Wipper" (?), Baltic	94.9	0.469	-0.56		"	00
" "	"Persante" (?), Baltic	101.	0.334	-1.06		"	00
" "	Gudenaa River, Danmark, Baltic	88.6	0.388	-0.504		Poulsen 1935	00
" "	Dunajec River, Poland, Baltic	94.9	0.493	-0.54		Dixon 1931	00
" "	Reda River, Poland, Baltic	95.5	0.344	-0.34		"	00
" "	Afva River., Sweden, Baltic	98.7	0.157	-1.90		Alm 1936	00
" "	Lake Windermere, England	30.	0.36	-		Frost & Smyly 1952	00
" salar	Scotland	125.	0.75	-	M = 1.1 (♀)	Nall 1927	00
" "	Baltic	156.	0.288	-0.46		Hohendorf 1966	0
" "	"	120.	0.439	-0.34		Thurow 1973	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SALMONIDAE							
Coregonus clupeaformis	Lake Nipigon, Canada	50.	0.13	-	M = 0.17	Hart 1931	00
" "	Lake Opeongo, Canada	70.	0.06	-	M<0.5	Kennedy 1943	00
" "	Trout Lake, Wisconsin	44.	0.09	-		Hile & Deason 1934	00
" " ♂	Lake Huron	77.0	0.188	-		Van Oosten 1939	2
" " ♀	"	79.8	0.182	-		"	2
" "	Lake Opeongo, Canada	14.	0.43	-	Dwarf whitefish	Beverton & Holt 1959	0
Coregonus sardinella	Lake Ikroavik, Alaska	38.	0.40	-	M = 0.6	"	0
" albula	Pereslawski Lake, USSR	35.8	0.318	-		Nikolsky 1957	2
" "	Vesijärvi Lake, S. Finland	26.7	0.531	-		Järvi 1947	2
" macrophtalmus	Attersee (FRG)	35.8	0.378	-		Eisele 1943	2
" lavaretus	Lower Lena River, USSR	96.8	0.032	-		Awerizew & Ssytsch-Awerinzewa 1937	4
" "	Peene-Achterwasser, Baltic	42.	0.64	-		Thienemann 1935	1
" "	Haweswater & Hullswaters, Gr.Br.	41.	0.741	-		Bagenal 1970	0
" "	Attersee (FRG)	43.8	0.447	-		Eisele 1943	2
" "	Bodensee (Lake Constance)	44.0	0.298	-	YC 29-30	Nüman 1959	2
" "	" "	39.8	0.417	-	YC 30-31	"	2
" "	" "	52.8	0.267	-	YC 52-53	"	2
" schinzi	" "	51.	0.232	-		Surbeck 1916	1
" maraena	Attersee (& other FRG lakes)	48.8	0.383	-		Eisele 1943	2
" cylindraceus	Lena River, upper course	45.4	0.241	-		Nikolsky 1957	2

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SALMONIDAE							
Thymallus arcticus	Western Siberia	49.8	0.139	-		Nikolsky 1957	2
" "	Baikal Lake (White)	46.8	0.235	-		"	2
" "	" (Black)	55.6	0.187	-		"	2
" thymallus	"European waters"	43.2	0.170	-		"	2
" "	River Gryfe, Scotland	45.0	0.262	-		Mackay 1970	2
" "	Douglas Waters, Scotland	33.9	0.412	-		"	2
" brevirostris	North Western Mongolia	40.	0.288	-		Nikolsky 1957	1
Oncorhynchus nerka	Cultus Lake, Canada	69.	0.58	-		Foerster 1929	00
" keta ♂	Columbia River, Canada	120.	0.27	-	4 years	Marr 1943	00
" " ♀	" "	105.	0.30	-	spawners	"	00
" " ♂	" "	106.	0.45	-	3 years	"	00
" " ♀	" "	102.	0.39	-	spawners	"	00
Leucichthys artedi	Trout Lake, Wisconsin, USA	29.	0.162	-		Hile 1936	2
" "	Silver Lake " "	23.	0.488	-		"	2
" "	Muskellunge Lake " "	21.	0.775	-		"	2
" " ♂	Clear Lake " "	41.3	0.417	-		"	2
" " ♀	" " "	43.0	0.394	-		"	2
" kiyi	"USA"	28.	0.51	-	M = 0.8	Deason & Hile 1947	00
Cristivomer namaycush	Great Slave Lake, Canada	56.	0.07	-	M = 0.6	Kennedy 1954	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCIAENIDAE							
Pseudotolithus senegalensis ♂	mouth of Congo River 20 m	42.6	0.947	0.79	Z = 1.1	Troadec 1969	0
" " ♀	" "	50.7	0.607	0.78		"	0
" "	off Lagos, Nigeria 20 m	47.8	0.66	-	Z = 1.25	Longhurst 1964	0
" "	" "	81.	0.33	0.0		Bayagbona 1969	0
" "	off Ghana 20 m	54.	0.44	-		Poinsard & Troadec 1966	0
" typus	off Lagos, 20 m	105.	0.217	-0.26		Anon. 1963	41
" " ♂	mouth of Congo River 10 m	61.1	0.346	-0.36		Poinsard 1973	0
" " ♀	" "	77.4	0.255	-0.41		"	0
" "	off Lagos 20 m	103.	0.29	-0.15		Bayagbona 1969	0
" "	Nigeria	61.2	0.37	-	Z = 1.25	Longhurst 1963	0
" "	Congo River mouth 20 m	61.3	0.42	-0.24		Poinsard & Troadec 1966	4
Nibea nibe	Formosa Strait	58.5	0.116	-		Lin 1956	00
" "	27° N 122° E	58.7	0.145	-1.04		Matsui & Amio 1951	4
" "	27° N 123° E 60 m	37.1	0.354	-2.0		Matsui & Amio 1951	41
" "	"	37.1	0.523	-0.01		Matsui & Takai 1951	4
" "	27° N 122° E 60 m	57.3	0.177	-1.09		"	4
" "	32° N 127° E 60 m	50.9	0.227	-1.08		"	4
" " ♂	-	40.1	0.238	-0.89		"	4
" " ♀	-	45.0	0.225	-1.05		"	4
" "	32° N 127° E 60 m	46.9	0.297	-1.09		Matsui & Amio 1951	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCIAENIDAE							
Cheilotrema saturnum	Baja California	47.	0.183	-2.64		Limbaugh 1961	41
Lagodon rhomboides	30°25' N 87°07' W	19.5	1.019	-0.537		Hansen 1970	4
Leiostomus xanthurus	Texas	34.	0.43	-		in: Rao 1966	0
" "	Lake Pontchartrain, Louisiana	23.9	0.89	-0.04		Sundaraj 1960	4
" "	Chesapeake Bay (York River Mouth)	24.1	0.725	-1.13		Pacheco 1962	4
Macrodon ancylodon ♂	31° S, Brazil	33.0	0.44	-		Yamaguti & dos Santos 1966	0
" " ♀	31° S, "	43.6	0.27	-		" "	0
Menticirrhus undulatus	Southern California	44.4	0.385	-		Joseph 1962	00
Micropogon furnieri	28° S 49° W	63.3	0.12	0.37		Vazzoler Valozzer 1962	0
" undulatus	Texas	39.	0.35	-		in: Rao 1966	0
" "	Florida, Pensacola Estuary	18.2	1.452	0.18		Hansen 1970	41
Nibea argentea	East China Sea, "Urride" 30 m	69.6	0.138	-0.10		Yasuda & Kosaka 1950	4
Pseudosciaena polyactis	37.5°N 125.5° E, South Korea	46.0	0.163	-2.82		Woo Il Choo 1970	0
Pseudotolithus elongatus	Congo River Estuaryy	46.7	0.274	-0.67	M = 0.34	Le Guen 1971	0
" "	off Sierra Leone 20 m	51.8	0.257	-0.44	Z = 1.49	Longhurst 1963	00
Roncador stearnsi	Southern California	47.6	0.287	-		Joseph 1962	00
Sciaena aquila	Port Said, Egypt	70.	0.195	-		Rafail 1971	41
" ruselli	13°10' N 100°45' E, Thailand	18.5	1.012	-		Phettongkam & Thasananul-kit 1972	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCIAENIDAE							
Cynoscion leiarchus	off Caera State, Brazil	45.4	0.35	-0.57		Namura 1966	0
" macdonaldi	mouth of Colorado River, lower California	128.	0.3	-	M = 0.3	Berdegue 1955	00
" "	Gulf of California	208.	0.255	-		Nakashima 1916	41
" maracaiboensis	Lake Macaraibo, Venezuela (a lagoon)	106.	0.27	0.21		de Espinosa 1972	0
" nobilis	33°30' N 119°30' W	146.	0.128	-0.28	M = 0.3	Thomas 1968	0
" petranus ♂	24°30' S, Southern Brazil	30.3	0.342	-	M = 0.58	dos Santos 1963	0
" " ♀	" "	32.1	0.345	-	M = 0.58	"	0
" nebulosus ♂	North West Florida	57.0	0.222	-		Klima & Tabb 1969	4
" " ♀	" "	70.6	0.174	-		"	4
" "	Punta Gorda, Florida 10 m	55.8	0.361	-		Welsh & Breder 1924	4
" "	Corpus Christi, Texas	85.5	0.134	-0.74		Pearson 1929	4
" " ♀	Fort Myers, Florida	70.1	0.169	-0.44		Moffett 1961	4
" " ♂	Cedar Keys, "	60.6	0.274	-0.02		"	1
" " ♀	" "	60.4	0.223	-0.289		"	4
" " ♂	Indian River, Florida	61.8	0.190	-0.14		Tabb 1961	41
" " ♀	" "	79.4	0.147	-0.47		"	41

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCIAENIDAE							
Miichthys imbricatus	East China Sea	80.6	0.32	-		Hanabuchi 1967	0
Otolithoides brunneus	off Bombay, India	160.	0.212	-		Narayanan Kutty 1961	1
Pogonias chromis	Texas	105.	0.17	-		Richard 1972	00
Pseudosciaena coibor	Chilka Lake, India	75.	0.386	-0.08		Rajan 1964	41
" diacanthus	Bombay-Saurashtra, India	122.	0.315	-0.31	M = 0.8	Rao 1966	0
" "	off Bombay, India	122.	0.294	-		"	4
Sciaenops ocellatus	Texas	90.	0.416	-0.08		Miles 1950	41
" "	"	105.	0.30	-		Pearson 1929	00
Umbrina canariensis	off Morocco 100 m	57.2	0.259	-		Dardignac 1961	4
" cirrhosa	" 50 m	86.5	0.279	-		"	4
Umbrina fusca	" 50 m	77.1	0.393	-		"	4
" cirrhosa	Port Said, Egypt	30.	1.452	-		Rafail 1971	4
Family SCOMBERESOCIDAE							
Cololabis saira	Southern California to Vancouver	37.6	0.34	-1.19	spring spawn. M≈1.6	Hughes 1974	0
" "	" "	37.8	0.38	-0.72	fall spawn.	"	0
" "	Northern California	39.4	0.595	-1.56		Sunada 1974	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCOMBRIDAE							
Rastrelliger kanagurta	off Cochin, India	21.8	5.16	-		George & Banerji 1964	0
" "	off Calicut, India	23.3	3.12	-		"	0
" "	off Karwar, India	22.4	4.32	-		"	0
" "	Java Sea	23.9	2.76	0.08	M = 4.44	Sudjastani 1973	0
" "	Kerala to Maharashta, India	23.9	4.92	0.17	M = 7.8	Banerji 1973	0
" "	Al Ghardaqa, Red Sea, Egypt	42.0	0.288	0.94		Rafail 1972a	0
" "	Indian waters	31.3	0.64	0.06		Seshappa 1958	4
" "	"	31.6	0.60	-		Sekaran et al. 1940	00
" neglectus	10^{o} N 100^{o} E Gulf of Thailand	20.	3.528	-	January brood	Sucondharman et al. 1970	0
" "	" "	19.6	4.14	-	July brood	"	0
" "	Tanjung Satai (Western Borneo)	22.9	2.28	0.01	M = 4.56	Sudjastani 1973	0
" "	Inner Gulf of Thailand	20.9	3.38	0.002	M = 7.22	Wongskul 1974	0
" "	" "	20.9	4.2	-	M = 4.0	Somjaiwong et al. 1972	0
Scomberomorus cavalla ♂	off Caera State, Brazil	116.	0.18	-0.22	LF	Nomura 1967	0
" " ♀	" "	137.	0.15	-0.13	LF	"	0
" maculatus ♂	Florida, Coastal waters	61.2	0.373	-	LF	Klima 1959	4
" " ♀	" "	76.7	0.356	-	LF	"	4
" " ♂	off Caera State, Brazil	83.	0.20	-0.40	LF	Nomura 1967	0
" "	" "	94.4	0.20	-0.05	LF	"	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCOMBRIDAE							
Scomber scombrus	English Channel & Irish Sea	41.8	0.43	-		Steven 1952	00
" "	Mediterranean (Western)	35.	0.5	-		Andreu & Rodriguez-Roda 1953	00
" "	North East Atlantic	41.	0.44	-		Le Gall 1939	00
" "	New England	46.1	0.234	-2.11		ICNAF Redbook 1973	4
" "	ICNAF Subarea 4	44.5	0.269	-1.57		Stobo & Hunt 1974	4
" "	Central North Sea	33.6	0.837	-0.18		Nedelec 1958	4
" "	Southern North Sea	42.	0.238	-2.07		"	4
" "	Celtic Sea	37.4	0.47	-0.97		"	4
" "	English Channel	37.	0.56	-		Steven & Corbin 1939	00
" "	New England	47.3	0.262	-1.34		Isakov 1973	4
" "	off Newfoundland	42.9	0.36	-1.14		Moores et al 1975	0
" "	North Sea	39.	0.43	-		Ehrenbaum 1923	00
Pneumatophorus japonicus	Sea of Marmara & Bosphorus	33.	0.473	-		Tuggac 1957	41
" "	Japanese Waters	46.4	0.40	-		Kondo 1966	00
" "	Soviet Pacific Waters	60.	0.306	-		Berg et al 1949	41
" "	Red Sea, Egyptian Waters	27.9	0.485	-0.03		Rafail 1972 a	0
" "	North West Pacific	45.5	0.34	-		Japanese Fish.Agency 1952	00
" "	Central Japan Sea	44.0	0.441	-0.42		in: Nikolsky 1957	4
" "	California	40.	0.4	-	M = 0.9	Fitch 1951, 1956	00

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SCORPAENIDAE							
Sebastes inermis	Sendai Bay, Japan, Zostera Belt	29.6	0.250	-0.76		Hatanaka & Sekino 1962	4
" pachycephalus	Amakusa Island, Japan	25.	0.372	-		Shiokawa 1962	0
" marinus	Barents Sea	73.2	0.064	-0.11		Travin 1951	4
" " ♂	Gulf of Maine 42.7° N 70.2° W	35.2	0.145	-		Kelly & Wolf 1959	4
" " ♀	" "	46.2	0.082	-		"	4
" "	Browns Bank	40.7	0.067	-0.82		Pearlmutter & Clarke 1949	4
" "	Barents Sea	75.6	0.059	-		Veschezerov 1944	4
" mentella	" >300 m	49.2	0.100	-0.22		Travin 1951	4
" " ♂	Gulf of Maine	32.7	0.151	-		Elvertowsky 1964	4
" " ♀	"	52.5	0.058	-		"	4
Scorpaenichthys marmoratus ♂	California	57.7	0.342	-		O'Connel 1953	4
Scorpaena guttata	Santa Monica, California 30 m	34.6	0.389	-		Turner et al. 1969	3
Sebasticus marmoratus	Amakusa Islands	29.2	0.335	-0.06		Shiokawa 1962	0
Sebastodes alutus	Bering Sea, 4° C spawn.temp.	45.3	0.124	-		in: Major & Shippen 1970	4
" " ♂	off Washington State	40.3	0.20	-0.71	M = 0.10	"	0
" " ♀	" "	43.2	0.18	-	M = 0.10	"	0
" mystinus	Monterey Bay, California	38.7	0.168	-0.60		Miller & Geiber 1973	4
Helicolenus dactylopterus	Morocco 33° S 8° W 200 m	42.1	0.204	-0.38		Boutière 1958	4
Gymnapistes marmoratus	South Tasmania, Zostera Belt 43°S	21.4	0.117	-2.3		Grant 1972	0
Hypodytes rubribinnis	Tamioka Bay, Japan, Zostera Belt	9.6	0.548	-0.65		Kikuchi 1966	4
Helicolenus dactylopterus	off Algier, Mediterranean	21.2	0.210	-0.85		Siblot-Boutefika 1976	0
Scorpaena porcus	" "	29.4	0.162	-0.97		Siblot-Boutefika 1976	0

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family SCYLIORHINIDAE							
Scyliorhinus canicula	Yugoslavia 100-200 m	56.8	0.530	–		Zupanović 1961	5
Family SERRANIDAE							
Epinephelus aeneus ♂	off Morocco, 50 m	85.	0.247	–		Cadenat 1935	41
" " ♀	"	100.	0.226	–		"	1
" striatus	Virgin Islands, Caribbean	110.	0.224	–		Randall 1962	31
Lateolabrax japonicus	off Sanriku, Japan (Pacific)	78.	0.225	-0.76		Yasuda & Koike 1950	4
" "	Japan Inland Sea	125.	0.142	-0.27		"	4
" "	Matsushima Bay, Japan	85.	0.193	-0.66		Hanataka & Sekino 1962	4
Dicentrarchus labrax	Casablanca to Agadir, Morocco	105.	0.089	-0.56		Gravier 1961	41
" " ♂	off Sète, France, Mediterranean	62.5	0.282	-0.16		Barnabé 1973	4
" " ♀	" "	78.5	0.228	-0.05		"	4
" " ♂	off Southern Ireland	70.4	0.14	-0.03	M = 0.10	Holden & William 1974	0
" " ♀	"	72.3	0.14	-0.20	M = 0.10	"	0
Mycteroperca microlepis	Tampa Bay, Florida	124.	0.124	–		McErlan 1963	4
Serranus alexandrinus	West of Alexandria, Egypt	72.5	0.154	-0.73		Rafail 1972 b	0

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SERRANIDAE							
Anthias squampinnis	Eilat, Red Sea	16.8	0.602	-		Gundermann & Popper 1975	4
Diplectum formosum	Florida	31.	0.287	-		Bortone 1971	4
Döderlinia berycoides	35°10' N 132° E 100 m	30.8	0.351	-		Kibesaki 1950	41
Morone americana ♂	Chesapeake Bay, York River Mouth	35.	0.131	-0.98		St. Pierre & Davis 1972	4
" " ♀	" "	52.	0.073	-1.52		"	4
" punctata	Port Said, Egypt	40.	0.156	-		Rafail 1971	4
" "	Casablanca to Agadir, Morocco	103.	0.066	-1.316		Gravier 1961	4
Paralabrax clathrus	Southern California	64.0	0.103	-0.77		Young 1963	4
Roccus lineatus ♂	San Francisco Bay	76.3	0.246	-		Scofield 1931	4
" " ♀	"	123.	0.125	-		"	4
" saxatilis	Coos Bay, Oregon	95.8	0.188	-		Morgan & Gerlach 1950	4
" "	Chesapeake Bay	98.7	0.158	-2.96		Vladykov & Wallace 1952	41

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SIGANIDAE							
Siganus canaliculatus	Southern Negros, Philippines	25.2	1.872	0.02		Lam 1974	41
" "	Aquaria	16.1	3.3	-0.09		von Westernhagen & Rosenthal 1976	4
" "	Sea Cages, Mactan Islands, Phil.	31.6	1.978	-0.15		Horstmann 1975	4
" "	Aquaria	30.8	1.548	-0.08		Tsuda et al. 1974	4
" guttatus	Sea Cages, Mactan Islands, Phil.	32.7	1.659	-0.22		Horstmann 1975	4
" oramin	Aquaria	16.3	3.3	-0.07		v.Westernhagen & Rosenthal 1975	4
" rivulatus	Israel Coast, Mediterranean	42.	1.016	-		Ben Tuvia et al. 1973	41
" spinus	Sea Cages, Mactan Islands, Phil.	24.4	2.321	-0.21		Horstmann 1975	4
" vermiculatus	Ponds, Fidji Islands	31.	1.90	-		Lichatowich & Popper 1975	4
Family SILLAGINIDAE							
Sillago panijus	Hoogly Estuary, Bay of Bengal	153.	0.054	+0.27	bad fit, L_∞ too high	Krishnaya 1963	0
" ciliata	New South Wales, Australia 10 m	36.5	0.677	-		Cleland 1947	4
" sihama	Gulf of Manaar, India	28.1	0.75	-		Radhakrishnan 1957	00
Family SILURIDAE							
Silurus glanis	Aral Lake	296.	0.042	-	p. 334	Nikolsky 1957	2

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family SPARIDAE							
Acanthophagus bifasciatus	Gulf of Aden 50 m	48.1	0.181	-0.93		Druzhinin 1975	4
Argyrops spinifer	" 50 m	96.4	0.077	-1.43		"	4
" filamentosus	" 50 m	45.6	0.227	-0.291		"	4
Cheimerus nufar	" 50 m	100.	0.067	-2.96		"	4
Sparus swinhonis	Tokyo Bay ? Japan	33.4	0.559	-0.06		Oshima 1942	4
Taius tumifrons	Hong Kong	41.5	0.249	-0.30		Li Kwang Ming 1958	4
" "	East China & Yellow Sea	93.2	0.069	-1.18		Tanaka 1956	4
" "	East China Sea, "A"	47.4	0.249	-0.30		Yasuda 1950	4
" "	East China Sea, "B"	34.3	0.373	-0.37		"	4
Dentex congoensis	Cape Verde, West Africa 100 m	30.3	0.16	-0.81		"	0
" macrophthalmus	Cap Blanc, West Africa	37.5	0.162	-1.32		"	0
" "	Cape Verde, West Africa	39.0	0.18	-0.88		"	0
" maroccanus	Cap Blanc, West Africa	34.3	0.18	-0.49		"	0
" "	Cape Verde, West Africa	32.5	0.18	-0.62		"	0
Dentex polli	Cap Blanc, West Africa	46.4	0.22	-0.28		"	0
Pagrus ehrenbergi	off Ghana	44.8	0.49	-		Rivajec 1973	0
" "	off Togo	41.2	0.501	-0.18		Beck 1974	4
Polysteganus undulosus	Cape to Delagoa Bay, South Africa	98.4	0.181	-0.74		Ahrens 1966	4
Dentex canariensis	off Ghana, 50 m	70.	0.173	-0.136		Rivajec 1973	41
" filosus	Cap Blanc, West Africa	107.	0.124	-0.60			0

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family SPARIDAE							
Chrysophrys aurata	43°25' N 3°40' E, near Sète	59.1	0.275	-0.26		Audoin 1962	4
" "	off Sète (France), Mediterr.	53.9	0.26	-0.74		Lassère & Labour 1974	0
" "	" "	76.	0.13	-1.22	Z = 1.17	Lassère 1976	0
" "	Hauraki Gulf, New Zealand	40.1	0.288	-0.05		Cassie 1956	4
" major	Wakasa Bay, Japan	70.8	0.117	-		Akazaki 1960	4
" "	Seto Inland Sea, Japan	55.3	0.18	-0.47		Kuniyuki et al.1975	0
" "	near Amakusa, Japan	71.	0.178	-		Mukarami & Shindo 1950	4
" "	32° N 125° E	84.3	0.100	-		Mukarami & Okado 1967	0
Pagellus acarne	20° N West Africa 120 m	36.	0.23	0.97	Z = 1.15	Le Trong Phan & Kompowski 1972	0
" centrodontus ♂	Bay of Biscay	48.1	0.162	-0.76		Guéguin 1969	4
" " ♀	"	49.9	0.146	-0.93		"	4
" "	French Mediterranean Coast	61.2	0.091	-		Olivier 1928	4
" coupei	off Dakar, Senegal	39.4	0.180	-0.81	Z = 1.58	Le Trong Phan & Kompowski 1972	0
" "	off Rio de Oro, West Africa	40.2	0.19	-0.63		"	0
" natalensis	Gulf of Aden 50 m	45.5	0.20	-1.01		Druzhinin 1975	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SPHYRAENIDAE							
Sphyraena argentea	off Los Angeles	140.	0.139	-1.58		Walford 1932	41
" barracuda ♂	Florida	178.	0.087	-		De Sylva 1963	4
" " ♀	"	156.	0.113	-		"	4
Family SQUALIDAE							
Squalus acanthias	Sea of Japan	132.	0.074	-		Kaganovskaya 1933	41
" " ♂	Washington State, USA	102.	0.071	-5.2		Bonham et al. 1949	00
" " ♀	"	153.	0.036	-6.7		"	00
" " ♂	Hecate Strait, British Columbia	84.7	0.092	-3.7		Ketchen 1975	0
" " ♀	" "	125.	0.031	-10.6		"	0
" " ♂	Georgia Strait, "	96.1	0.067	-5.0		"	0
" " ♀	" "	129.	0.034	-7.3		"	0
" " ♂	Northern Scotland	79.7	0.21	-2.0		Holden & Meadow 1962	0
" " ♀	"	101.	0.11	-3.6		"	0
Family STICHAEIDAE							
Lumpenus lampretiformis	Firth of Forth Area, Scotland	47.6	0.205	-		Fulton 1904	4
Ulvaria subbifurcata ♂	Trinity Bay, Newfoundland	17.0	0.186	-0.45		LeDrew & Green 1975	4
" " ♀	" "	14.9	0.215	-		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family SYNGNATHIDAE							
Hippocampus zosterae	Cedar Key, Florida	2.0	12.	-	M = 2.5	Strawn 1958	00
" hudsonius	Florida	14.0	2.5	-	M = 1.0	Herald & Rakowicz 1951	00
Syphonostoma typhle	Kiel Bight, Baltic	26.2	0.558	-		Worthmann 1975	51
Syngnathus rostrellatus	"	20.0	0.747	-		"	51
Family SYNODONTIDAE							
Saurida tumbil	Mouth of Manilla Bay	43.6	0.431	-		Tiews et al. 1972	5
" "	28^{o} N 124^{o} E East China Sea	63.2	0.286	-0.289	M = 0.46	Shindo 1972	41
" undosquamis	Inner Gulf of Thailand, off Trat	37.9	0.889	-		Kühlmorgen-Hille 1970	5
" "	Gulf of Thailand, off Prachuap Khirikhan	41.3	1.132	-		"	5
" "	Mediterranean, Israel Coast	31.5	0.698	-		Ben Yami & Glaser 1974	41
Family TETRAODONTIDAE							
Uranostoma richei	Lyttelton Harbour, New Zealand	21.9	0.246	-		Habib 1976	4

SPECIES NAME			SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family THUNNIDAE (LF)									
Thunnus albacares			off Mexico 19,5° N 111° E YC 1953	172.	0.56	-		Hennemuth 1961	0
"	"		" " YC 1954	162.	0.66	-	M = 0.64	"	0
"	"		" " YC 1955	173.	0.66	-		"	0
"	"		Eastern Atlantic	195.	0.42	-	M = 0.8	Le Guen & Sagakawa 1973	0
"	"		Japanese Waters	169.	0.564	-		Yabuta & Yukinawa 1957	4
"	"		Japanese Waters	191.	0.327	-1.02		Yabuta et al 1960	4
"	"		Hawaii	190.	0.454	-0.75		Moore 1951	4
"	"		Eastern Atlantic	159.	0.160	-0.47		LeGall 1951	4
"	"		off Dakar, trop. Atlantic	182.	0.431	-		LeGuen et al 1969	0
"	"		" "	207.	0.315	-		LeGuen & Champagnac 1968	0
"	"		off Pointe Noire, Congo	166.	0.557	-		"	0
"	"		" "	182.	0.443	-		LeGuen et al 1969	0
"	"	♂	off Mauritania	167.	0.183	-		Vincent Cuaz 1963	4
"	"	♀	"	228.	0.116	-		"	4
"	"		-	152.	0.663	-0.62		Yukinawa 1959	4
"	"		off Senegal	187.	0.152	-0.34		Postel 1955 a	4
"	"		- (data: Zharov)	229.	0.277	-		in: Baudin Laurencin 1969	4
"	"		- (data: Postel)	205.	0.132	-4.12		"	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_0	NOTES	SOURCE	METHOD
Family THUNNIDAE (LP)							
Thunnus alalunga	Gulf of Biscay 45°30' N 5° W	135.	0.138	-		Aloncle & Delaporte 1974	4
" "	" 50° N 10° W	150.	0.119	-		"	4
" "	South African Waters	151.	0.118	-		Talbot & Penrith 1963	4
" "	Tropical Atlantic	135.	0.190	-		Yang 1970	00
" "	Bay of Biscay	134.	0.183	-	M = 0.2	Bard 1971	4
" "	off Northern Spain	104.	0.274	-		Anon. 1973	0
" "	Eastern Atlantic (off Bretonny?)	118.	0.262	-1.31		Priol 1944	4
" "	off California	109.	0.233	-2.14		Bell 1962	4
" "	Central North Pacific	189.	0.093	-		Otsu 1960	-
" "	North Pacific 40° N 150° W	136.	0.169	-1.87		Clemens 1961	4
" "	North Pac. Current 28-40° N	145.	0.159	-3.06		Nose et al. 1957	4
" "	Central Atlantic	140.	0.141	-	M = 0.23	Beardsley 1971	0
Sarda sarda	off Morocco (Atlantic)	64.0	0.693	-1.42		Dardignac 1962	4
" "	Black Sea & Eastern Mediterran.	81.5	0.525	-		Nikolsky 1957	4
" "	" "	67.8	0.795	-		Nümann 1955	4
" "	" "	103.	0.132	-1.80		Zusser 1954	4
" "	" "	95.6	0.237	-1.24		Nikolov 1960	4
" "	" "	64.0	0.860	-		Türgan 1958	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family THUNNIDAE (LF)							
Auxis thazard	South West of Sri Lanka	61.	0.83	-		Sivasubramaniam 1973	5
Euthynnus affinis	Seychelles	90.	0.444	-		Wheeler & Ommanney 1953	41
" alletteratus	Tunesia	136.	0.164	-		Postel 1956	4
" "	Senegal	99.5	0.315	-		Postel 1955	4
Thunnus atlanticus	Cuba	78.	0.33	-	M = 0.67	Carles Martin 1975	0
" "	Florida	90.	0.216	-1.50		Idyll & Sylva 1963	41
" maccoyi	38° S 155° E, Australia	222.	0.141	-		Robins 1963	0
" "	Australia	220.	0.14	-		Yukinawa 1970	0
" "	Australia	220.	0.151	-	M = 0.2	Hynd & Lucas 1974	0
" orientalis	Suruga Bay, Japan	266.	0.075	-1.01		Kimura 1932	4
" tonggol	Northern Australia	110.	0.324	-		Serventy 1949	4
Katsuwonus pelamis	Hawaiian waters	84.6	1.16	-		Uchiyama & Struhsaker 1975	4
" "	" "	85.1	0.95	-		Brock 1954	4
" "	Eastern Pacific	85.1	0.44	-0.01		Schaefer 1961	4
" "	Hawaiian waters	82.3	0.77	-		Rothschild 1967	0
" "	10° N 100° W (Pacific)	80.5	0.63	-	M = 1.68	Joseph & Calkins 1969	0
" "	North of Madagascar 12° S 48° E	62.3	0.98	-		Marcille & Stequert 1976	0

SPECIES NAME	SAMPLING LOCATION	L_{∞}	K	t_o	NOTES	SOURCE	METHOD
Family THUNNIDAE (LF)							
Thynnus thynnus	European Waters	389.	0.067	-1.60		Sella 1930	4
" "	Bay of Biscay	419.	0.056	-1.92		Anon. 1954	4
" "	Long Island, New York	318.	0.091	-0.308		Westmann & Neville 1942	4
" "	Spain, off Barbate	384.	0.064	-2.52		Rodriguez-Roda 1972	4
" "	Long Island, New York	218.	0.162	-1.12		Westmann & Gilbert 1941	4
" "	Cape Cod - Long Island	468.	0.050	-	M≈0.15	Mather & Schuck 1960	4
" obesus	10^{o} S 115^{o} W	187.	0.38	-		Kume & Joseph 1966	0
" "	Pacific	236.	0.125	-	tagging data in table III	Alverson & Peterson 1963	31
" "	North Pacific Current 28-40^{o} N	195.	0.106	-1.13		Nose et al. 1957	4
" "	Central & Western Pacific	222.	0.183	-		Iversen 1955	3
" "	Eastern Pacific	169.	0.608	-		Hennemuth 1961	4
" " ♂	Central Pac. (Hawaiian Longlines)	222	0.114	-		Shomura & Keala 1963	0
" " ♀	" "	196.	0.167	-		"	0
Family TORPEDINIDAE							
Torpedo torpedo	Gulf of Tunis	43.1	0.110	-2.58		Quignard 1973	4
Family TRIACANTHIDAE							
Triacanthus brevirostris	Ise & Mikawa Bay, Japan	41.4	0.216	-		Ohsima & Nakamura 1941	4

SPECIES NAME	SAMPLING LOCATION	L_∞	K	t_o	NOTES	SOURCE	METHOD
Family TRICHIURIDAE							
Trichiurus lepturus	Madras to Mangalore, India	98.	0.200	-		Prabhu 1955	00
" "	Cape Blanc - Cape Verde, W.Africa	147.	0.296	-0.46		Wojciechowski 1971	4
" "	Yellow Sea	50.5	0.286	-		Hamada 1971	4
" "	-	45.4	0.411	-		in: Hamada 1971	4
" "	Suruga Bay, Japan	43.4	0.298	-		Kosaka et al 1963	2
" "	Gulf of Manaar Area, India			-		James 1967	4
Family TRIGLIDAE							
Trigla hirundo	off Morocco 50-120 m	65.	0.148	-1.11		Collignon 1968	4
Chelidonichthys spinosus	Japan	54.8	0.494	-		Yukonawa 1951	00
" kumu	New Zealand, Pegasus Bay 45° S 173° E	54.9	0.406	0.29		Staples 1972	0
" " ♂	Hauraki Gulf, N.Zealand 36,5° S 175° E	28.8	0.549	-0.55		Elder 1976	0
" " ♀	" "	36.4	0.641	0.19		"	0
Family TRYGONIDAE							
Dasyatis sabina ♂	Texas Coast, USA	109.	0.309	-0.90		Sage et al 1972	51
" " ♀	"	144.	0.259	-0.72		"	5
" akajei ♂	Miyazaki Prefecture, Japan	105.	0.1	-	M = 1.8 (?)	Yokota 1951	00
" " ♀	" "	150.	0.1	-	M = 0.45	"	00
Urolophus halleri	Belmont-Newport, Calif. 10 m	46.0	0.152	-2.03		Babel 1967	4
Family XIPHIDAE							
Xiphias gladius	Canada Gulf stream waters (W_∞ = 630 kg → LF, with bill)	630.	0.153	-	catch temp. ≈ 18° C	Beckett 1974	41

SPECIES NAME	SAMPLING LOCATION	Loo	K	t_o	NOTES	SOURCE	METHOD
Family ZEIDAE							
Zeus faber	Mauritania 20° N	57.9	0.298	-		Debrosse 1937	41
" "	Bay of Biscay to Channel	56.7	0.267	-	♂♂<♀♀	"	41
" " ♀	" "	69.3	0.147	-		"	41
Family ZOARCIDAE							
Macrozoarces americanus	Southern New England	122.	0.107	-		Olsen & Merriman 1946	4
" "	Bay of Fundy	91.	0.076	-0.53		Clemens & Clemens 1921	4

Order SELACHOIDEI (due to the method utilized (by Holden, 1974), the data given here seem particularly unreliable and need confirmation).

	L (∞)	"K"
Family HEXANCHIDAE		
Heptranchia perlo	214	0.121
Hexanchus griseus	482	0.125*
Family ORECTOLOBIDAE		
Ginglymostoma cirratum	427	0.141
Family LAMNIDAE**		
Alopias superciliosus	549	0.168
Alopias vulpinus	610	0.127*
Aprionodon isodon	160	0.158
Carcharodon carcharias	1 113	0.113
Cetorhinus maximus	1 372	0.131*
Isurus oxyrinchus	610	0.143
Lamna nasus**	305	0.112
Family SCYLIORHINIDAE**		
Pseudotriakis microdon	295	0.170
Family CARCHARHINIDAE**		
Carcharhinus acronotus	168*	0.159*
Carcharhinus leucas	305	0.125
Carcharhinus limbatus	228*	0.139
Carcharhinus longimanus	396	0.186
Carcharhinus obscurus	335	0.171
Carcharhinus oxyrhinchus	152	0.148
Carcharias taurus	318	0.193
Carachias maculipinnis	244	0.137
Eulemia milberti	239	0.133
Galeocerdo cuvier	457	0.106
Galeorhinus** zyopterus	192	0.104
Mustelus canis**	152	0.138*
Negaprion brevirostris	284	0.132
Prionace glauca**	383	0.110
Scoliodon terrae-novae	93	0.226*
Tiakis barbouri	38*	0.210
Family SPHYRNIDAE		
Sphyrna diplana	305	0.150
Sphyrna tiburo	152	0.110
Sphyrna tudes	457	0.166
Sphyrna zygaena	656	0.158
Family SQUALIDAE**		
Centroscymnus coelolepis	112	0.115
Dalatias licha	182	0.180
Etromopterus hillianus	32	0.170
Etromopterus spinax	52	0.144

all data from Holden (1974); * mean of two values; Lmax ≠ L (∞);
** families, genera or species listed in previous tables.

2.4. Bibliography II

As explained in Part I, I have not seen all of the papers listed here, and their reference had to be taken verbatim from various author's reference list. Several of these references appear to be at least incomplete. I felt, however, that nothing would have been gained by not including them, together with the corresponding growth parameters. It is hoped that an improved version of this compilation can be produced soon in which the references have been revised.

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